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Special Articles

HEREDITY AS A CAUSE OF MENTAL DEFECTIVENES

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My name has been set down on the programme for a paper on the Feeble Minded. Having regard to the nature of this gathering and the necessity for brevity in the treatment of each question, I have decided to confine my observations to Heredity as a Cause of Mental Defectiveness.

Few, I imagine, have any idea of the extent of feeble mindeness or the burdens, private and public, that its existence imposes. I regret to have to say that in our work at Orillia we have not yet been able to collate statistics that will afford an accurate estimate of the number of feeble minded persons in the Province of Ontario. We do know that while we have a population of over 800, and there are many feeble minded, young and old, in the various charitable and corrective institutions of the Province, these all put together do not constitute one-half the number of our mental defectives.

In many of the bordering States of the Union, New York, New Jersey and Massachusetts, especially, a systematic effort has been put forth to take a census of those who can properly be classed as mental defectives. Basing our calculations upon the results there obtained, we are justified in assuming that at the present time there are at least 6,000 feeble minded people in the Province of Ontario. Probably one-third of these have been identified and are receiving some attention in Houses of Refuge, Children's Aid Societies, Orphans' Homes, Hospitals for the Insane and kindred institutions. But a great army remains to bear the penalties imposed upon them, either in their own homes, or, most regrettable of all, herded with the criminal class for offences for which they should not be held either morally or legally responsible. Criminologists who have given the question attention, estimate that from 15% to 25% of our law breakers are sub-normal and that their offences are directly due to their defectiveness. In reformatories for children the percentage runs over 25%. Recently a census was taken of the population of the State Reformatories and Industrial Schools of New Jersey. Of 13,188 cases reported, 14.5% were declared mental defectives. One institution considered all of its inmates normal. The others placed the proportion of feeble minded at from 1% to 41%. The fact is that while the public recognizes the pitiable wretches who are outcasts on the streets or objects of contemptuous isolation in the homes because of their pronounced idiocy, it is only when a higher grade imbecile is

committed for some offence or series of offences, that public attention is directed to his case.

Not infrequently in the history of the institution at Orillia have we been called upon to care for a feeble minded woman and two or three of her offspring, whereas if proper steps had been taken for her protection before the unfortunate woman reached the child bearing age, the Province would have been saved the burden of maintaining another generation of imbeciles.

This brings me to the particular subject of my paper. It may be interesting in the first place to give you the result of an inquiry into the evidence of heredity disclosed in the population at Orillia. I regret that the files there are not sufficiently complete to go behind the individual records of our children and ascertain to what extent feeble mindedness has exposed itself in the family tree. They do these things better in some of the States to the south of us where they have field workers especially engaged to collect information bearing upon this very important question.

Of those now living in Orillia we have 39 families contributing two each, and 17 families contributing from three to five each. This means that over 16% of our population can be arranged in family groups. What the figures would be were we enabled to collect statistics of defective relatives outside our hospital, it is difficult to make an approximate estimate, but I am satisfied they would be alarming. Only the other day we had an application for the admission of a young man from one of our eastern towns. It transpired that he had a brother who is also feeble minded and should be cared for by us, and when we examined more closely the family record, we found that two boys of the same family have been in our institution for some years.

I have already made reference to the apathy of the public towards children of defective mentality. The physically rugged child who can do chores at home or work for the neighbors, receives no attention. She is probably regarded as stupid or dull-witted and she is allowed to run her course until she becomes responsible for another generation of imbeciles. The less dangerous cases—the low grades incapable of work and not likely to procreate are pressed into institutions. It is time the public realized that for her own happiness and comfort as well as for the future well-being of society, the feeble minded girl should be placed in a training school or a custodial institution early in life. There she can be made useful to herself and of some use to the community. If in the next five years we could only place reasonably safe guardianship over the mental defectives of this Province, we would have laid the foundation for the gradual elimination of that unfortunate class. It would mean a large expenditure, 'tis true, but I fear the burden will be still greater if our present laxity of interest in these unfortunates is allowed to continue.

This public indifference towards the problem of the feeble minded is strikingly evidenced in our attitude to the marriage ceremony. It is quite a joke in the community when the village softy enters into bonds of wedlock with probably an equally defective partner. If people could only see what we see and hear what we hear, they would regard such a union as one of the most pitiable tragedies that could be consummated. In recent years some restrictive measures bearing upon defectives have been incorporated in the marriage laws of most civilized countries. Thirty-four States of the Union make insanity, lunacy, or want of understanding or will to consent a cause for the prohibition of marriage, and in some cases, if contracted, a reason for its dissolution. In eight States the imbecile or feeble minded are specified. These States are: Connecticut, Indiana, Kansas, Michigan, Minnesota, New Jersey, Ohio and Washington. Absolute prohibition of the marriage of the idotic is the law in fifteen States and the District of Columbia. Other States put a restriction on those incapable of consent, epilipties, alcoholics, etc. The Indiana law against the marriage of defectives reads as follows:

"No license to marry shall be issued where either party is an imebeile, epileptic, or of unsound mind, nor to any person who is or has been within five years an inmate of any county asylum or home for indigent persons, unless it satisfac-

factorily appears that the cause of such condition has been removed and that such male applicant is able to support a family and likely to so continue. Nor shall any license issue when either of the contracting parties is affected with a transmissable disease, or at the time of making application is under the influence of liquor or a narcotic drug."

Michigan limits its restrictions to those who have been confined in public institutions "unless there be filed in the office of the County Clerk a verified certificate from two resident physicians that such person has been completely cured of such insanity, epilepsy, imbecility or feeble mindedness and there is no probability of such person transmitting any of such disability to the issue of such marriage."

A practical attempt towards preventing the marriage of the mentally unfit is being made in London, England, in what is known as the Mental Deficiency Bill. It is estimated that fifty thousand persons will be included in the provisions of this measure. It may be interesting to note that the London County Council now maintains ninety schools for mentally defective children. The attendance at these schools averages seven thousand and the education of the children costs the ratepayers of London $500,000 per year. It is with a view of stopping the rapid increase of this class that the Mental Deficiency Bill has been proposed. One of the clauses of the bill reads as follows:

"If any person intermarries with, or attempts to intermarry with any person whom he knows to be defective within the meaning of the Act, or if any person solemnizes or procures or conives at any marriage, knowing that one of the parties thereto is defective shall be guilty of a misdemeanor."

Prohibition of the marriage of the insane and mentally defective in Ontario appears in the Marriage Act, sub section 2 of clause 16 in the nature of a penalty. The section reads as follows:

"If any minister, clergyman, or other person shall celebrate the ceremony of marriage between two persons knowing or believing either of them to be an idiot or insane, the person so offending shall incur a penalty of five hundred dollars."

I am of the opinion that this section in the Ontario Marriage Act could be materially strengthened. It should make it a misdemeanor to marry any person who has been confined in a public institution as a lunatic or mental defective, unless in the cause of the insane, such person can produce a certificate from two qualified medical practitioners that he or she has been restored to a normal mental condition. While the word "idiot" is, no doubt, intended to cover all mental defectives, it is now only applied to the lowest grade. The new term "Moron," describing the high grades, and "imbecile," as defining the second or middle class, should also be incorporated in the Act.

But even supposing we enact and enforce laws prohibitive of the marriage of defectives, is that, you will ask, likely to prevent the propogation of this unfortunate and burdensome class? It is a sorrowful fact that a very large proportion of the children whose defectiveness is due to heredity are illegitimate, the coming into being of whom no marriage law could have prevented. To stop the recruiting of this army of feeble minded and degenate, procreating laws are being enacted in some countries. A few years ago Dr. Godfrey, member for West York in the Ontario Legislature, introduced a measure dealing with this question. The doctor's bill applied solely to those confined in the asylums and reformatories of the Province. I was of the opinion then, and my experience at Orillia has strengthened me in the view that as far as the feeble- minded are concerned, a measure of that scope would have little practical efficacy. I need not stop to emphasize the point, but I think it is the generally accepted theory now that it is impossible to restore a Moron, an imbecile, or an idiot to a normal state. By training and direction these unfortunates can be improved but they cannot be cured. That being the case, you will agree with me when I say that the only safe place for the mental defective is in a training school or custodial institution, and that while they are there and under proper discipline, the danger from any increase in population from within is reduced to the minimum. What we have to meet is the burden of future generations of defectives produced by those who

have never seen the institutions to which the measure I have referred to applies. Admittedly the advocates of sterilization laws have gained much ground during the past few years and the question is now being openly discussed where previously it would have been mentioned, if at all, in a whisper. The argument of those who favor such enactments is that the imbecile and criminal classes should be sterilized in the interest of society and for racial betterment. Those who strongly favor this procedure point out that the degenerate classes are prone to the grossest sexual offences. They multiply instances from criminal records and point to the evil effects of bad heredity. They point out that punishment has no material retarding influence on these people, and that the operation renders them more tractable and improves rather than impairs their general health. Indeed it is claimed some defectives have recognized an incubus in their sexual life and have voluntarily requested surgical relief.

On the other hand those who are not so enthusiastic over the surgical prevention, draw attention to the fact that the class of offence aimed at is not the only one that these people are addicted to and that consequently after the operation they would be a danger still Then they urge what I have already emphasized that segregated in public institutions—and under constant supervision, there is no real necessity for surgical interference. Instances are not lacking where persons of both sexes having been sterilized and allowed to mingle with the public, have become an attractive mark on that very account, and while they could not reproduce their kind, they have added to the pollution and spread of disease in the community.

The remarkable fertility of the mentally defective and their pre-disposition to sexual passions are generally recognized. The only thing apparently that some of them are capable of doing is to reproduce their kind. With the well-to-do and well developed practising race suicide, and the paupers, degenerates and defectives revelling in the doubtful pleasures of large families, there is some ground for what is known as the eugenics movement. That movement may in the eyes of many be regarded as a fad. In its defence this much at any rate can be said. It is doing good work in educating the people to look at the subject of heredity from a national point of view. Commenting on the recent International Eugenics Conference in London, a leading writer says that scientific breeding would destroy two of the choicest qualities of man, love and initiative. To that statement we may give ready concurrence. Also let us admit that it is useless to talk of breeding men like farm stock to a type. But surely we are on safe ground when we say that however human impulses and social customs may be permitted to influence the union in wedlock of two normal people all the forces of society should be directed again the procreation of those doomed to be diseased or defective. At the Annual Conference of Charities and Corrections two years ago, the suggestion was made that the parties to a marriage contract should be compelled to undergo a medical examination. I notice that this idea is being taken up in New Zealand with prospects that it may be incorporated in the marriage regulations of that country. It is proposed that the examination and its result should be absolutely confidential, not even disclosable by the doctor to the other contracting party. While it is true that two people having fallen in love and deciding to marry are not likely to be dissuaded from their course by a doctor's opinion, it is claimed that the fact of a medical certificate being necessary would cause people to give more serious thought to marriage from the eugenical standpoint and arouse public sentiment to an appreciation of the pity and the shame of unions, the issue of which are destined to be productive of individual misery and public danger.

It is unnecessary to pursue the subject farther. I have tried to lay before you some of the information that has come to my knowledge and which is no doubt familiar to most of you. My brief experience in dealing with the feeble minded has not convinced me that drastic measures directed towards the elimination of that unfortunate class would be desirable or efficacious. The public discussion of

the most extreme proposals must, however, do good. The people do not appreciate the misery and suffering which are the inevitable lot of the vast majority of mental defectives; nor do they realize the weight of the public burden that their existence imposes. While provision for their care and security remains almost stationery, their numbers are rapidly increasing. Anything calculated to arouse a deeper interest in these, the most unfortunate of our fellow beings, and impel good citizens to put forth renewed efforts for their protection is surely worth while, and that is my only defence for having occupied so much of the valuable time of this association.

THE SOCIAL EVIL

By JAMES PEDERSON, M.D., New York City.

To comply with our chairman's request for a summary of the present-day methods and means for combating the social evil, and to note the progress made in results, it is only necessary to condense the detailed report recently drafted by Dr. Morrow, the president of the Society of Sanitary and Moral Prophylaxis. The work and achievements of that society cover the advances in this branch of preventive medicine. While admitting with praise the excellent work in progress for many years by many organizations concerned generically—often specifically—with the welfare and uplift of the individual and the race, it must be conceded that the Society of Sanitary and Moral Prophylaxis initiated the present concerted effort to teach the public the gravity of the venereal diseases, and to educate the individual up to appreciating automatically that he, personally, is under a moral obligation not to expose himself to them for the sake of protecting the body politic against them.

In the seven years of the society's existence there have been added two branches, twenty similar organizations in this country, and a society of sanitary and moral prophylaxis in New Zealand; the membership has extended to Europe, Asia and Africa, and two of the educational pamphlets have been translated into Japanese.

The ways and means employed are literature and lectures, as with all educational systems. Incidentally, legislation designed to lessen the social evil is studied.

The literature's value is readily estimated from the titles of some of the pamphlets as examples. Those published by the parent society are: "The Young Man's Problem" (23,000); "Instruction in the Physiology and Hygiene of Sex, for Teachers"; "The Relations of Social Diseases with Marriage and their Prophylaxis" (now out of print); "The Boy Problem (for Parents and Teachers)" (22,000); "How My Uncle, the Doctor, Instructed Me in Matters of Sex" (10,000; an authorized translation from the Danish); "Health and Hygiene of Sex for College Students" (45,000). In addition, it has a quarterly, "Social Diseases," in which are published its transactions in full, with reports from correspondents, and other related matters.

The St. Louis Society of Social Hygiene publishes: "A Plain Talk with Boys on Sex Hygiene;" "The Delinquent Girl" (facts and recommendations based on observations of a Juvenile Court probation officer); "A Straight Talk with Employers and Leaders of Organized Labor;" and "The Effect of the Venereal Diseases on Young Men."

The Spokane Society of Social and Moral Hygiene has distributed in the past two years 83,000 copies all told of its seven circulars, beginning with "The Need for Education in Sexual Hygiene," and running through a graded series for girls and boys at different ages, concluding with one for young men and one for young women.

The Connecticut Society of Social Hygiene, with its twenty local educational committees, has sent to every physician in the state "Information for Persons Having Venereal Disease." It has three other

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publications, some translated into other languages for its factory population. It uses also the New York Grand Jury's report on the white slave traffic, the publications of the parent society, and a few approved books—partly as a circulating library.

The Mexican Society of Sanitary and Moral Prophylaxis has its own magazine and an original treatise on the "inutility and dangers" of "regulated prostitution."

The lectures include the informal, more or less personal talks to small, classified, segregated groups by specially trained and qualified lecturers and teachers, and the more formal presentation of the subject to either segregated or mixed audiences. Some formal lectures, under necessary restrictions, have been illustrated by lantern slides of the extra-genital pathologic conditions. In progressive Indiana the lecturers are commissioned and paid by the state board of health.

Under informal lectures, those to groups of mothers assembled in the public school buildings, to shop girls, and to men and to women in the factories are to be specially mentioned.

All organizations in any degree affiliated with the society have accepted the work as axiomatically one of evolutionary education, and therefore have given verbal instruction a prominent place.

At the formal meetings the topics have comprehended all phases of the subject, from the strictly medical to the medico-legal. For example: the effects of gonorrhoeal infection upon children; the age at which sex instruction should commence; how to give that instruction in the public schools; specific methods of correct instruction before college years; hospital and dispensary requirements for prophylaxis; prophylaxis in the army and navy; the affluents of prostitution; health department control of venereal disease; reglementation; medical examination before marriage; penalizing the transmission of infection in marriage; reduction in vice in certain western cities through administrative reform; finally, the sterilization of criminals and defectives. Certainly we have not been talking moral platitudes.

The sanctional literature and lectures cannot but impress us with the firmness of the determination to totally avoid emotionalism and morbid sentimentality. The consistently sustained effort has been, and is, to teach certain physiologic truths and medical facts to parents and to the youth of both sexes, only by indirection leading their minds to graps a moral obligation gation to accept what I may be allowed to summarize as the ethics of decent citizenship.

Legislative measures have not been the dominant policy of the society, for almost obvious reasons: (1) the law's delays, both before and after enactment; (2) the obstacles in the way of securing equable measuers, and (3) the medical problems concerned in the diagnosis, treatment and cure of the venereal diseases. Moreover, and, in truth, therefore, it was from the ouset the society's endeavor to correct the errors of the unwritten law of silence by the self-enforcing law of outspoken, enlightened public opinion. A member expressed this epigramatically when he said that a law becomes law only when it is no longer necessary; that is, no law ever operates as law unless public opinion has been trained into sympathy with it. With precisely the same distinction, though speaking on a very different topic, the Hon. Leslie M. Shaw says: "The incessant cry is for more laws as distinguished from more law." Lest my interpretation be not sufficiently concrete, I shall quote Dr. Morrow. On the matter of a medical certificate as a prerequisite to marriage, he says that it will be difficult to enact such a law without including both sexes—an unnecessary hardship, as the wife so rarely introduces a venereal disease into the family; that to be effective, the same law must obtain in all the states; that the difficulty in making a diagnosis in latent cases except after prolonged observation will often militate against the value of the certificate. On the matter of "imposing penal responsibility for introducing infection into marriage," he calls attention to the law's self-limitations in that the injury must first have been inflicted before it can become a cause for action, and that if the complainant should prove her case she will have publicly announced herself as diseased.

It would seem, therefore, an economy of time and energy to concentrate our efforts

upon the line of least resistance, and train public opinion without further delay.

The channels and agencies through which this educational movement has been ever widening are many and multiform—schools, colleges and universities, libraries, various church and charitable clubs, the army and the navy, associations of teachers and nurses, civic leagues, city clubs, settlements, industrial associations and employers of labor. Some of them and others not mentioned are closely affiliated with the society and have a not inconsiderable influence. As to the public schools, the State of Washington has made sex instruction mandatory in normal schools; Texas is introducing it; Chicago began a year and a half ago to teach the high school pupils something of social hygiene, and Philadelphia is planning for it. A partial report from a committee of the National Education Association shows that in 138 schools and colleges in this country personal and sex hygiene is systematically taught. As to the colleges and universities, fifty-four of them and several leading schools have distributed among their students within the past year 25,000 copies of Pamphlet No. 6—"Health and Hygiene of Sex for College Students." Letters of acknowledgement from the heads of these several centres of learning express a realization of the lack of sex instruction, and say with gratitude that the society's literature supplies it.

The daily press less than two years ago hesitatingly noticed the society and the necessity for its work. More recently a St. Louis paper printed an open letter to parents urging them to instruct their children in sex matters. The New York Tribune, on April 7th, devoted half a page of its Sunday supplement to an interview with Dr. Morrow on the whole subject.

The reputable journals of Mexico, urged by the Mexican Society of Sanitary and Moral Prophylaxis, successfully attacked the pornographic press.

Various popular journals and magazines have exposed prostitution and the white slave traffic with details calculated to convince parents that the temptations and dangers to which the uninstructed, unprotected girl is exposed are real. What between the blind ignorance of some parents and the fashionable folly of others, such warnings are in order and should be of value.

What are the measurable results? For the first time a truly widespread knowledge of the existence of transmissible diseases acquired through sexual immorality, their nature and their prevalence. An almost equally widespread conviction of the necessity for such early instruction of both sexes as will lead them later to correctly value the sex function. A growing conviction that prostitution is largely the result of a faulty economic condition in the body politic and therefore is not a necessary evil. Possibly the comparatively new international and the new interstate agreements concerning the white slave traffic may be traced—at least indirectly—to an aroused public opinion. The long-held physiologic fallacy, pervading the lay mind and known as "the sexual necessity for men" is being corrected. It has been officially stated that within the past three years immorality in many colleges and universities has been reduced by from 20 to 40 per cent. The New York City Department of Health has been petitioned to make venereal diseases reportable, not by the patient's name but only by disease, for the double purpose of accumulating statistics and of reminding the public that these are serious diseases. A censorship of moving picture shows and slot machines has been secured. Also the regulation of dance halls. The repeal of Clause 79 of the Page Bill was secured on the ground that it was "unilateral" and that it simulated reglementation Such are some of the results of the work of the society, aided by the co-operation of one or more of the affiliated bodies. Similar police measures are being urged, or have been adopted, in other cities. The Mexican society is discussing whether the venereal diseases should be a legal bar to marriage. Finally, an organization of the various societies in the country into a national body has been effected. Its title is "The American Federation for Sex Hygiene," and $25.000 a year for three years has been pledged for the prosecution of its work.

The briefest summary of this subject should reserve, nevertheless, sufficient space for a paragraph of tribute to Dr. Prince A. Morrow. Among the many, he

was the one who interrupted an extensive practice and, acting under a compelling conviction ingrafted by the experience and observations of that very practice, determined that the public should be taught that which for too many generations it had not known. This was seven years ago. Has our profession at large given the endeavor the tremendous influence of an unqualified approval? That the venereal diseases are the fundamental causes of much of the misery that afflicts the individual, the family and the state, and that prevention of disease is the genius of medicine and surgery to-day, are, it seems to us, the only facts necessary to an indisputable argument for co-operation on the part of all, recollecting that one of the honorable duties of the physician is to promote knowledge.

HOW TO OBTAIN EFFICIENCY FROM PRESSURE FILTERS

By H. W. COWAN, C.E.

Before discussing the efficiency of any type of filtering appliance it will be necessary to give a brief resume of what has brought about their evolution.

The first type of filter, consisting of a large prepared bed of sand, was the result of observation of the effects produced on water which had flowed through layers of sand and gravel, giving a clear and crystalline stream as the result.

On putting this into operation, good results were not obtained immediately, but after several days' run the resulting effluent was apparently satisfactory.

The reason for the change was due to the slimy deposit which had formed on the surface of the sand.

This produced a sticky coating round the particles of sand on the surface of the bed, to which suspended matter adhered and was retained, in the same way as globules of mercury will run together and become incorporated.

Further experiment showed that with clear waters it took considerable time for the film to form; that only certain rates of flow were permissable; anything higher causing damage to the film, through which break the water flowed, as there was little resistance to its passage through the sand at that point. The disturbance set up caused surface currents which further broke up the surface, and led to still greater inefficiency.

The rate of flow being determined, and maintained, a growth of algae appeared after a time which further added to the closeness and stength of the film, allowing a higher rate of flow to be used.

When everything appeared to be satisfactory, after some weeks' operation the water supply showed signs that breaks in the film were present.

These proved to be due to the presence of insect larvae, blood worm tubes having formed in the sand, from which the insect chironomous on maturity, emerged in large numbers, leaving small perforations through which the water flowed at a high rate, producing vibrations which broke up the countinuity of the film.

On cleaning the beds, which were an acre in extent for a volume of two million gallons per twenty-four hours, a repitition of the first troubles in again tuning up the beds before they were effective, was experienced.

Read before the Canadian Public Health Congress, Toronto, September, 1912.

Regulators being used to determine the rate of flow, and careful examination being made from day to day to show when the beds required cleaning, improved the position, until it was found that the algoid growth in winter was much slower than in the summer months, calling for varying adjustments to suit seasonal conditions. In short, expert attention had to be given to slow sand filters to be productive of good results.

The disadvantages of this method of filtration had to be overcome, something being required to form the filtering film quickly, positively and evenly. Which would operate to the same advantage in summer and in winter, the cleaning of which could be simplified so that it might be performed more frequently, before insect ova could be deposited, and allowing of a much higher rate of filtration.

The first results of these conclusions led to the construction of covered filters to prevent the varying conditions in summer and in winter, and the aforementioned insect troubles, but the high cost involved, the difficulty of cleaning, the time required for filming, and the slow rate of flow were still to be surmounted.

In overcoming these difficulties America led the way by patenting the first mechanical filter, to be closely followed a few months later by British engineers with other patents of a similar nature, all claiming a rapid rate of flow, simplicity of cleaning, positiveness in filming, and the occupation of a relatively small space.

These filters were shells constructed of wood staves, steel, or iron, in which the sand was enclosed so that it could not come in contact with contaminating influences, crushed quartz, charcoal, polarite, or oxidium being also used as the media.

Ferric oxide was used as a means of forming the film by entangling the colloidal and suspended articles, which fell on the filter bed, forming a felt in which organic and lighter substances were arrested.

Mechanical filters passed the water at a rate of from eighty to one hundred times that of slow sand filters, and immediately came into favor on account of the clarity of their filtrate, and the large saving in space.

They were washed by passing water through from the under side of the filter bed for several minutes, and running the sediment washed out to waste.

At this time the discoveries of Pasteur, Koch and other scientists with regard to bacteria as the means of transmitting disease, enabled research work to be conducted with regard to the real impurities of water and not those apparent only to the eye.

The proof that water was the chief agent in carrying disease gave a stimulus to water purification, having in view the elimination of pathogenic germs.

This led to the study of the effect of using ferric oxide on the water treated by mechanical filters, which showed that iron was left in the water after filtration.

The growth of such organisms as Crenothrix, Cladothrix, Spirophyllum was produced in the water mains, Crenothrix in particular with its sack like bladders deriving sustenance from the iron present, and filaments discolored with ferruginous matter were produced.

These filaments attached themselves to the pipes, and diminished their carrying capacity about one per cent. yearly, while back presure and fluctuating flow detached fragments which discolored the water and gave off an unpleasant odour.

Resulting from this Alumina Sulphate was put into use, and Ferric Oxide practically discontinued, the disadvantage of the latter being overcome. Practically all mechanical filters use this as a film producer at the present time.

The use of Alumina Sulphate produces a white sticky viscid film (Alumina Hydrate) which is precipitated when reacting with the lime in the water. This collects suspended matters, and deposits them on the sand bed, having at the same time the property of removing colouring matter from the water treated, by its coagulating action.

The hydrate being absolutely insoluble, no trace of it can be detected in the filter effluent by chemical reaction, even the well known log wood test failing to show its presence.

The success obtained led to the attempt to use a coagulent in slow sand beds, by first passing water through large coagulating basins, from which it flowed to the filter beds. This has never proved satisfactory owing to the large area of the beds preventing an even deposit on their surface.

Mechanical filters were now subject to more rigorous tests for the elimination of bacteria, and were found to be unsatisfactory, owing to the foulness in the filter material not being removed by washing on account of the sticky nature of the film, which a reverse flow could not remove completely.

Attempts to force air through to assist the passage of the wash water were made, but while the filter was apparently clean it was really becoming more polluted through its whole bed.

When completely contaminated this would break through showing a high bacteria count at varying periods, preventing continuous efficiency from being obtained, and using a large amount of filtered water in the attempt to thoroughly wash the bed.

For these reasons mechanical pressure or closed filters have been looked on with disfavor for domestic supply, and American engineers have as a body reverted back to the open type filter, in which the sand is removed from time to time for complete cleansing, and a much lower rate of flow is used.

The excessive rating of pressure filters had much to do with causing American engineers to discontinue their improvement, but in Britain several engineers persisted in their experiments to obtain absolute cleansing, and finally succeeded in making a filter which could be cleaned mechanically.

In this filter the reverse flow was used, while the sand was violently agitated by means of agitators which released the sticky coating from the grains of sand. The power required to operate the washing mechanism, however, was so great that its use was not feasible.

A few years later the introduction of water under pressure through jets in the agitators, caused the sand to be put into such a state of suspense while they were being revolvd, that a very trifling amount of power was necessary.

This allowed of continuous efficiencies of ninety-seven per cent. being obtained, the consuming of a large amount of reagent which made operating costs prohibitive being now troublesome, until further study led to consideration of the stone germ proof filter invented by Pasteur.

It was felt that if a silica sand could be used which would compress under the water pressure into a temporary stone, allowing a high rate of flow to be obtained and the minimum of coagulent for the reduction of bacteria to be used, that the difficulty would be solved.

This was tried with great success and as it now stands the Pressure Filter constructed in Britain represents the highest type of commercial efficiency, more especially since the use of turbines operated by the inflow of water to pump in the coagulent have been devised.

With these turbines as the rate of flow varies so does the amount of alum introduced, and the introduction of the alum before the water passes through the turbines enables these motors to thoroughly mix the coagulent so that positive hydration is obtained before the raw water reaches the filters.

Further observations have led to the discovery that the precipitation of suspended and coloring matters is very much more rapid and complete, when brought about under pressure, than in open tanks.

For water very high in turbidity and in color large pressure settling chambers may be used to remove excess of turbidity or color before the water arrives at the filter, instead of with open settling tanks which often require double dumping operations.

The rate of precipitation or sedimentation under pressure is twelve times more rapid in some cases than in open tanks.

Having discussed the progress of pressure filtration it will be seen that a rounded silica sand which is not porous, as such would collect impurities within the grains,

where it could not be removed by washing is necessary. The sand should be such that impurities are retained in the coagulent between the grains, where with efficient washing it can be removed.

An adequate means of thoroughly agitating the sand should be employed, while the washing operations are going on, and the water used should not exceed what is economical.

The best test for effective washing is to occasionally take a sample by removing the manhole, and passing a tube into the sand two minutes after the washing has been performed.

The sand withdrawn when placed in distilled water should show little or no turbidity, if it has been properly cleansed.

It is important that only a steady acting pump giving a steady flow free from vibrations be used, as jerks or unsteadiness in the flow might cause distortion and breakage of the film.

A means of adding the coagulent should allow of careful adjustment, varying in proportion to the water passing through the system, and such means should provide for the intimate mixing of the alum to ensure complete hydration.

In no case should pressure filters operate at a greater rate than four thousand gallons per square foot of filtering area in the twenty-four hours.

Their effluent should be free from suspended matter and color, so that a platinum wire one-twentieth inch in diameter can be discerned at a depth six and one-half feet.

The bacteria count per cubic centimeter capable of growing on agar or gelatine at 18 degrees centigrade after forty-eight hours incubation should not exceed one hundred whatever the amount present before treatment.

There should be no bacteria typical of sewage present such as Bacilli Coli, Typhosus, Enteritidis, no cholera vibrio nor dysentry bacilli in fifty cubic centimeters incubated for forty-eight hours at 20 degrees Centigrade.

No taste or odor should be distinguishable when water is heated to 37 degrees Centigrade.

Water for washing should not exceed two per cent. of the whole supply. The raw water should contain sufficient lime to hydrate the alum, and if not present this should be added.

An effective pressure filter will satisfy these requirements besides having the following advantages:

Simplicity in operation.

Economy in operation costs.

Low initial cost.

Not more than two pounds reduction in pressure in passing through filters.

They may be affixed direct to the main and pumped through.

They are suitable for extension by the addition of extra units.

They can be removed at little cost to another site, should circumstances require it.

They are continuous in efficiency, with proper washing mechanism.

Occupying small space, they can be housed at a low cost.

Being manufactured ready for erection they can be erected rapidly, cheaply, and in any weather.

They can be used for water softening by the addition of simple appliances.

In Britain Pressure Filters of high efficiency are supplying a population equivalent to a consumption in this country of four hundred million gallons, large municipalities having found them highly satisfactory.

Dr. Percy Frankland in an analysis of the supply of Banbury, taken from the river Cherwell found that the bacteria reduction was close on 99 per cent., no Coli being found in 100 cubic centimeters.

The Stanley Moor reservoirs at Buxton, Derbyshire, show certified reductions of 98 to 99 per cent.

The town of Shrewsbury drawing water from the River Severn, showed that Coli could not be detected in less than 500 cubic centimeters.

Many similar results showing as high a continuous efficiency as 99.9 per cent. warrant the attention of those interested in public health work in Canada, to this type of filter, which when properly constructed is the most suitable for the conditions ruling here.

THE EFFECTS OF IMMIGRATION ON THE NATIONAL HEALTH

By WILL W. LEE, Secretary of Immigration Branch of Y.M.C.A., Quebec.

Those of you who were present at the meeting of Social Workers yesterday morning were probably impressed by the same fact which impressed me, viz., that every topic dealt with at that meeting had a very close and vital relationship to the problems of immigration. Any doubts or queries that were in my mind regarding the necessity for discussion of the topics at a meeting such as this were dispelled after listening to those speakers to whom I refer.

From a close study extending over the past eight years, both from local and national viewpoints, I am convinced that the majority of our national internal problems will be found to have their roots in the problem of the immigrant. Not only do I believe this to be true, but I think, furthermore, that the fundamental importance of the immigration problem, is as it affects the national health, for that which affects the health of a nation is affecting the most vital part of that nation

Some noted economist said that in their immigration problem the United States was attempting the most colossal task which any nation had ever taken in hand, and if this is so, then Canada's task to-day is far greater. With a population only one-tenth of the population of the United States at that time, we are receiving an immigration equal to one-third of their immigration, and an immigration, furthermore, which each year tends to become more nearly allied to theirs.

In the past undue emphasis has been placed upon the social and political aspects of immigration to the detriment of the medical and hygienic aspects. The findings of the United States Commission on immigration would indicate that the greatest effect of immigration upon their national life has been its effect, either directly or indirectly, upon the national health.

There are two important differences between the immigration of to-day and that of fifteen or twenty years ago. At that time with the inadequate transportation facilities and consequent high cost of travelling, the immigration was restricted to the more robust, hardy better off members of the nations from which our immigration is drawn. With increased facilities for travel and the extensive advertising of the transportation companies, coupled with the advertising done by immigrants who have succeeded in our country, there is no limit except a financial one as to the type of men who will endeavor to land upon our shores.

Another important difference is that while earlier immigration to Canada was practically confined to Northern Europe, to-day the tendency is the other way, and each year shows an increasing proportion coming from the South Eastern portion of the continent.

It is obvious that the influx of so great a number of people with different ideals, different methods of living, and different standards, must have an important effect upon the national life and health, and for purposes of convenience I have endeavored to classify these effects into three main divisions: (1) those of direct hereditary diseases; (2) the effect of our modern industrial life upon the immigrants themselves; (3) the economic effect of changed living and working conditions in industrial centres, due to immigration.

While there are many hereditary diseases which we might with advantage discuss at this time in their relationship to immigration, probably the most important is that of insanity. There are different reasons why this is so important, the first being that insanity is so much on the increase in the countries from which we draw the bulk of our immigration. It is significant in this connection that during the past eight years out of 1,863 persons who were deported to Europe from our country, 687 or more than 35 per cent., were deported for one of the following reasons: Insanity, imbecility, idiocy or feeble-mindedness.

While we have no Canadian statistics regarding the second generation of immi-

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grants, there are some statistics prepared by Mr. Goodwin Brown, of New York, which have an important bearing on this subject. As a result of his investigations along these lines in the State of New York, he says that 48 per cent. of the inmates of their insane asylums are of foreign birth, and that 74 per cent. are of foreign birth or parentage. It would be interesting to know what proportion of the inmates of our own insane asylums would come under this heading.

To a gathering such as this it is unnecessary for me to add emphasis as to the vital importance of this phase of the question, for we have only to look at the history of the Juke's family to see the far-reaching and awful results of the intermarriage of people of this type. I think that the present Immigration Law regarding this is comprehensive, and as far as is physically possible is adequately administered. The fact, however, that potential insanity is the hardest disease to detect in the course of a hurried examination would show beyond any manner of doubt that trained alienists are absolutely necessary for the examination of immigrants, and I congratulate our nation upon having in this capacity a man of Dr. Page's calibre and training. The only way, however, in which we can guarantee that the inspection of immigrants at our ports will be adequate is to take the immigration administration out of politics and place it upon a civil service basis.

Dr. Page, in his paper presented at the last meeting of the Public Health Association, dealt fully with the examination phase of immigrants, both from the viewpoint of a port officer and also in connection with the medical examination on shipboard.

During the past year there has been a lot of discussion and talk regarding the closer relationship of the different parts of our glorious Empire on subjects which relate to the Empire at lare, and I feel that from our Canadian standpoint there is no more important matter in which we need co-operation than in this of immigration. As you are aware, the British Board of Trade examine more or less closely all immigrants previous to their sailing for Canada, and I feel that here is an opportunity for this co-operation. If the medical inspection on the other side of the water was as adequate as it might be, there would, undoubtedly, be much less hardship caused by debarred immigrants having to return after setting up their homes, and much less danger of undetected cases of potential insanity getting into our country.

Turning to the effect of our modern industrial conditions upon the physical and general health of the immigrants themselves, we must remember, as before, that our latter day immigration is very different from the earlier. That immigration was drawn largely from agricultural districts and went to agricultural districts here, the industrial expansion of Canada, however, created a demand for industrial labor, which could only be met by using immigrant labor, and this has had a very far-reaching effect upon the immigrants, more particularly those from Southern Europe. Let me illustrate this by an experience that I had last year. In order to get at the vital points of immigration I took a trip to and from Europe as a steerage passenger, and on my voyage eastward, I found that out of 143 returning immigrants from Continental Europe, 125 who had been engaged in agricultural occupations in their own country had been engaged in industrial occupations in Canada. The effects of changed conditions are probably showing more clearly with the Russian Jews and Sicilians than with any other two nationalities. The former, who are, as you know, round-headed in their own country, have, in the second generation under conditions on this continent, changed to a long and narrow-headed type, while the Sicilians have under the same conditions done the reverse.

Another important matter in this connection is that numerically the families of the children of immigrants tend to become smaller, and in many cases the stature of the offspring is smaller. If there is a physical conformation to a new type in one generation, then the problem of assimulation becomes much more significant.

The indirect effect of immigration upon the nation's health, viewed from an economic standpoint, is vitally important.

In the first place, as a general rule, the immigrant, by reason of his ignorance of the ways of the country and by his lack of money, cannot choose his working conditions, and this tends to lower those working conditions and to undermine the health of the workers and their families. The effect of this reaches beyond the immigrant worker himself, and spreads to the native worker.

Again, the desire to save money and the necessity of sending it to Europe for the support of wives and families left there, tends to promote a low standard of living among the immigrants themselves and this is further aggravated by the group system of living which is found to exist in practically every industrial community. In this connection I might interject a reference to the shack towns which exist on the outskirts of nearly all our cities, and which the Municipal Officer of Health will agree with me are a decided menace to the well-being and health of the community.

During last winter I had the opportunity of making some investigations regarding living and housing conditions in some of our Eastern industrial cities, and I found there conditions well nigh unbelievable, worse, in fact, in some cases, than I had found during similar investigations in Chicago and New York City.

In conclusion, it would seem that the great question is not only the nature but the nurture of the immigrants and, therefore, the responsibility for the effects of this immigration upon the nation's health rests largely upon us Canadians who have the welfare of our country at heart, and more particularly upon those of us who have the opportunity of educating the public as to this problem.

The United States Immigration Commission, whose findings have afforded me some valuable matter in studying this question, show that there is practically no racial tendency towards overcrowding, congestion or unsanitary living conditions and, therefore, where these conditions exist, they are caused by the industrial conditions of our own country.

We must create an industrial, social and moral educational environment of the most lifting sort for our foreign-born citizens, and I would like to mention briefly here what the Young Men's Christian Association is trying to do in this respect. By means of classes in English held in the homes of the foreigners; by lectures on civics, history and general hygiene, and by the distribution of literature in various languages dealing with personal and house sanitation, tuberculosis, etc., we are endeavoring to give to our coming Canadians some ideas and some of the advantages of our modern civilization, and while in Canada this type of work is only in its infancy, I trust that the next few years will see a large expansion of it.

Our efforts as Canadians must increase and our organizations must be developed to the point where we can absorb and assimilate the immigrants into our industrial system without injury to the progress of native Canadians or older immigrant workers, and when this is done the immigration problem will cease to exist.

SEWAGE DISPOSAL IN RURAL DISTRICTS

By ASCOUGH RODWELL,

Engineer and Surveyor, Skipton Rural District Council (Associate), England.

This subject covers a field too wide for thorough investigation in this paper; so, to facilitate matters, the author refers to a rural district (as a typical one), with which he has had some acquaintance. It has in parts a scattered population, whilst in others the contributory places consist of mills and streets, making them really urban in character.

In these latter cases proper sewerage schemes are inevitable. The closets are principally on the water carriage system, and the sewage containing comparatively little trade effluent is easily dealt with by settling tanks, the effluent being treated on land (if suitable land is available) by some type of percolating filter, or by contact beds.

From the February Number of the Journal of the Royal Sanitary Institute.

For villages, the disposal works should be as simple as possible, as in very few instances only can a man be fully employed in looking after the works. In every case the sewage should pass through some form of settling tank to intercept the solids; and preferably with the tank in two sections; so that the sewage can be turned into one section while the other is being cleansed. The liquid may then be turned on to the land, or dealt with by percolating filters or contact beds.

For small village installations the author has used the ordinary rectangular trough distributor, having a central self-acting tipper, with double compartments, so that when one becomes full, and the contents are tipped over into the distributing shoots, the other compartment is in proper position for being filled in its turn. This apparatus is very simple, and only needs attention and oiling about once a week.

For larger village the "Ideal" distributor (Tuke and Bell's) has been used. This is an open trough revolving distributor, the rotating motion being given by two pawls, working on a toothed base-wheel, and actuated by a central tipper bucket. Each time this tipper becomes full, its consequent tilting action brings one of the pawls into contact with the toothed wheel, causing the distributor to swing round: at the same time the liquid flows into the revolving troughs. One edge of the trough arm being serrated, the liquid is divided and spread in fine streams over the surface of the filter.

For beds of over 15 feet diameter the author has fixed perforated pipe arm distributors of the following types:—"Adam.s," "Candy Whitaker's," "Farrer's" and "Ham Baker's," also "Mather and Platt's" open trough, all doing good work.

For filtering media, broken bricks, broken stone, river gravel, clinker, and honeycombed slag have been principally used, and the depth of the filter varied from 4½ to 6 feet according to the fall available to the outfall.

For isolated houses, the methods of dealing with the sewage are many. Some of the mansions have up-to-date sedimentation tanks, slate beds with automatic dosing valves, and everything of the latest type, whilst others (especially farm houses) simply drain on to the nearest available land and distribute the sewage over the surface by open channels cut in the turf, the course of the channels being diverted on to new ground as circumstances require. Some farm houses are provided with bath, water closet, etc., and frequently the sewage is discharged into the ordinary manure tank, which also takes the drainage from the farm buildings, the contents of the tank being pumped out into barrel carts and distributed over the meadow land in the usual way. The author does not advocate this method, as the tanks are usually not cleaned out often enough, and consequently the odor of the contents becomes very offensive, and is still more pronounced during the emptying of the tank.

A small concrete sedimentation tank having a capacity of about a twenty-four hours' flow with submerged inlet and outlet pipes and a filter of sand, fine gravel, or engine ashes will give excellent results, and, if attended to regularly, is a far more preferable method of dealing with the sewage of isolated houses. Also the self-contained tank and filter arrangements now made by two or three firms for the purification of sewage from country houses and isolated buildings are compact and effective; and only in very exceptional circumstances, where the contents can be regularly and frequently taken away, should the old type of cesspool be permitted. Of course many houses have the ordinary block privy, they have no bath, so the only sewage is from the kitchen slop-stone, and the liquid from here is very frequently discharged into the nearest stone drain or brook. This may be termed the easiest way of disposing of the sewage, and certainly the old saying "out of sight, out of mind" is very applicable. The author has known a village of ninety or one hundred houses dealt with in this way, until the river authority came along and insisted upon a proper scheme of sewering; the people were quite content; they enjoyed good health, and, notwithstanding the fact that the stone drains all emptied into the stream which ran through the village, the stream was simply alive with trout, and the fishing of the river just below was regarded as one of the best

lengths in Yorkshire; the chances of one's election as a member of the local fishing club being very remote.

At one village of about 200 inhabitants where sewage works have been established, the treatment is by simple tanks, the effluent being turned into chanenls on to the land. One day the author received a complaint from the river authority that it appeared from a report by the inspector the effluent from certain works discharged into the river was not satisfactory, and would he be good enough to see the matter was attended to at once, etc. He immediately visited the works, and certainly the effluent where it joined the river was a trifle cloudy, but about a yard away from the effluent pipe was a group of some of the finest trout he has ever seen (most of them, he estimated, would turn the scale approaching one pound each), all their noses were pointing in one direction, waiting for some tasty morsel coming down the pipe.

In another case, where the drainage of a village of about twenty houses simply consisted of stone drains discharging at different points into the river, the council had their attention called to the "serious pollution," etc. It was plain to see where the various drains terminated at the river, but the water in the river was beautifully clear, and, out of mere curiosity, the author had a sample of water taken below the village (this was after the river had received all the so-called pollution) and sent for analysis. The following is the footnote on the report:

"This is a very soft water of moderate organic purity, suitable for both drinking and domestic purposes."

These two instances are mentioned simply in support of the contention "that there ought not to be the same rigid requirements as to the standard of purity of the effluent from small rural villages (where the quantity of sewage effluent is, comparatively speaking, a mere drop in the bucket)" as for towns where the quantity discharged into the stream is much greater.

When, however, the effluent has to be discharged into a small stream (which in summer time is probably dried up), the standard of purity should, of course, be higher. The author has in his mind an instance of this kind, where the effluent was discharged into a stream below a weir belonging to a corn mill: when the mill was working, all the water flowed along the mill race to the mill. Thus there was no water in the stream itself, except the effluent from the sewage works, and this being the only water supply for the cattle pasturing in the land alongside the stream below the works, it was absolutely necessary that the effluent should be as pure as possible.

The modern methods of dealing with sewage by tanks, bacteria beds, etc., has enabled disposal works to be placed much nearer the houses than was permissible when the method of treatment was by broad irrigation, or even intermittent filtration over land. Also the area of the land required for the works is much smaller. The council have just recently completed disposal works for two villages, the combined population being over 600. The works consist of sedimentation tanks, percolating filters, storm-water tanks and filters, sludge beds, humus tank, and tool house, and the whole area, including fence walls, measures less than half an acre.

HUMAN EFFICIENCY

By DR. W. A. EVANS, Chicago.

Mechanical efficiency, physical fitness, and mental capacity—three attributes of man's makeup—when working co-ordinately, make a veritable human dreadnought. Of these the first is of primary importance. On it the superstructure man is built. This means that al lthe forces which operate to influence the future life are largely but a reflection of the mechanical ability. For this reason society has a right to require each of its members to start the battle of life with a mechanical efficiency as nearly perfect as possible. It surely should have as much right to per-

fect itself mechanically as it has to require mechanical efficiency in the construction of its dreadnoughts and great ocean liners.

In attempting to meet the definite demand which society has a right to make on each of its individual members, the state is vitally interested. It recognizes that it cannot bring each of its individual members up to the acme of usefulness in society and the commercial world if they are handicapped by a diseased or enfeebled body.

It is becoming more apparent each year that physical well being and mental progress are inseparable. An important feature of the state's work then is to give the child in school a sanitary, healthful environment. Means for examination for the various diseases of childhood and physical defects should be provided. Provision for the detection and control of communicable diseases and for the protection of the pupils from diseases unrecognized by the laymen and teachers is all important.

In practically all of our cities of any size the school boards recognize the need of health work at school. For the purpose of developing a strong, virile constitution in our school children they have provided playgrounds. Here games, play, and the various forms of physical education are indulged in and enjoyed by the pupils. Experience has shown that this phase of our school work has developed individuality. It makes a child self-reliant. It discovers him to himself. It gives him courage, confidence, and hope. It lays a foundation for poise, balance, and steadiness. It provides for him a strong frame in which to develop and house a strong mentality. It gives him a strong frame mechanically and physically to resist the inroads of disease in the years to come.

It would seem that "if the state has the right to demand mental fitness, it has an equal right to demand physical fitness. If it has a right to prevent the contagion of ignorance, it has the right to prevent the contagion of disease and bodily neglect."

To accomplish this end it is necessary to begin at the cradle as nearly as is practicable. And it is also just as necessary to develop one attribute where an effort is being made to produce the useful, well balanced man as any other attribute. Getting together in a harmonious working way the essential attributes is what constitutes the fundamental fabric from which the forceful, independent man results.

Charles Wagner has tersely set forth a plan of procedure in the following words: "Let us bring up our children simply. I had almost said rudely. Let us entice them to exercise that gives them endurance—even to privation. Let them belong to those who are better trained to fatigue and the earth for a bed than to the comforts of the table and the couches of luxury. So we shall make men of them, independent and stanch, who may be counted on, who will not sell themselves for pottage, and who will have withal the faculty of being happy."

In the great game of life nothing perhaps is a greater handicap than physical disadvantage. Where there is defective physical health, learning and training become irksome and the highest type of individual cannot result, no matter what the facilities for imparting information and knowledge are. To obviate this social evil and environment society has a right to demand such changes from time to time in our methods of education and vocational training as will bring its individual members a wel ldeveloped mechanical and physical efficiency to care for and house their mental capacity.

At the outset nature, in constructing the human body, reached the highest possible mechanical efficiency in the framework. Each bone is fitted with an exactness and a nicety not possibly attainable by man in the construction of his most perfect machine. Even in our dreadnoughts, where the parts of the great propelling force—the engine—are centered, the bearings and the joints are not cannot be, fitted with such accuracy and perfection as the joints in the human skeleton. In the construction of the great ocean liners and dreadnoughts the engines that furnish power for driving them express the highest type of engineering fitness and skill that man is capable of accomplishing. Each lever, each gear, each bearing, and each bolt is made with reference to micrometer measurements. But

the micrometer is subject to error; nature is not.

The highest type of efficiency which the most skilled engineer may express in the construction of, say, a spring, looks puny when stacked up alongside of nature in the construction of the arch of the foot which, after all, is only a spring. Each time the weight of the body is placed on the arch of the foot it extends and expands, only to contract and relax when the weight is withdrawn. There is no other part of the human framework, perhaps, where such perfect rhythm is expressed as in the movements and play of the bones which enter into the makeup of the arch of the foot, unless it is the heart.

In the construction of the mechanical spring, with all our improved methods, it is necessary to harness it, and, in some way or other, limit it in its exposure and use and observe extraordinary care to keep it from breaking. In contrast to this, witness the arch of the foot responding to every call with an accuracy that is scarcely understandable and a reliability that is perfect, though ofttimes it is harnessed in an extremely insensible shoe.

Mechanical inefficiency is responsible, to a very large degree, for that great army of school children suffering from physical defects, many of which are completely remediable, practically all of which are partially so.

Commenting on health problems in education, in an article published by the United States Bureau of Education, Dr. Thomas D. Wood says:

There are approximately 20,000,000 pupils in the schools of the United States to-day.

Of these 300,000 to 400,000 have organic heart disease.

Probably 1,000,000 at least have now, or have had, tubercular disease of the lungs.

About 1,000,000 have spinal curvature, flat foot or some other moderate deformity serious enough to interfere to some degree with health.

Over 1,000,000 have defective hearing.

About 5,000,000 have defective vision.

About 5,000,000 are suffering from malnutrition, in many cases due, in part at least, to one or more of the other defects enumerated.

Over 6,000,000 have enlarged tonsils, adenoids or enlarged cervical glands which need attention.

Over 10,000,000 have defective teeth which are potentially, if not actually, detrimental to health.

Several millions of the children possess each two or more of the handicapping defects.

In view of the information disclosed by these statistics it will be seen that a great work is necessary if we are to maintain the proper standard of mechanical efficiency. Mechanical efficiency is all important, not only in the gruelling campaign and the forced march in actual active warfare, but it is also essential to the success, health, comfort, and happiness of that great army of men and women who are daily taxed by the requirements of a busy commercial life.

The soldier who is exposed to the elements and forced to take long marches is not more in need of mechanical perfection and physical fitness than the bookkeeper who sits at his desk or the sewing girl who directs the course of the needle. In the latter cases, where indifference to physical health has resulted in deformities and in correct carriage, the door is flung ajar and the ever present, ever active microbe of some fatal malady immediately avails himself of a long sought opportunity to ply his trade.

Again, the great captains of industry, the actors, the governors, the senators and the cabinet ministers, who have not exceptional physical development when they enter great contests, ofttimes find themselves heavily handicapped. The winners are usually those who have heeded the warning and entered the contest prepared for each emergency. In other words, they have profited by the information imparted to them in the consideration of how to defer old age in maintaining physical activity.

In the case of those who, for one reason or another, have got into a habit of improperly carrying the body, there is much useless expenditure of energy. This is noticeable in those who walk incorrectly. A great many people have a habit of throwing the body backward (over the centre or dead line) too far when walking. This results in the useless consump-

tion of energy while walking. It means, in other words, that you use muscular effort to drive your body forward, besides the muscular effort necessary for its otherwise natural propulsion. Not only does this position of the body in walking make it necessary to use more energy, but it places the bones forming the framework of the body in improper relation. In many instances such a relation of the bones is so brought about as to cause impingements which ofttimes work exceeding great harm to the joints.

Since walking is but a series of successive falls successfully resisted the body should lean forward just over the center of dead-line enough to make it act as an automatic flywheel. In the engines of our great ocean liners and dreadnoughts provision is made by means of an artificial flywheel to carrythe piston over the centre or deadline. The act of leaning just a little forward when walking is a like function in man.

Incorrect standing and sitting are other faults which are readily acquired and with much difficulty corrected. They both materially depreciate the mechanical efficiency of the body from a purely mechanical standpoint. Besides, they place the internal, vital organs in an unnatural relation to their normal position, thereby many times bringing about disorders and diseases which, if not early recognized, may terminate seriously.

By standing and sitting incorrectly the backbone is forced into an unnatural curve, thereby causing pressure on the spinal cord. This pressure may be of sufficient degree to cause irritation of the many nerves that are in close constant communication with the cords. Where the deformity is sufficiently extensive the chest becomes sunken, limiting the lung space. This means less lung freedom, less room for lung expansion, less air, less oxygen, poorer blood, less general resistance, early actual aging of the body.

THE FIRST REGULAR OPEN AIR SCHOOL IN CANADA*

By J. H. HOLBROOK, M.B., Hamilton.

When asked to write this paper the subject suggested was "The First Regular Open-Air School in Canada" and I am pleased to be able to claim for Hamilton the honor of being the first city in Canada to establish such a school. And first I want to emphasize the fact that these children all have sufficient pulmonary involvement to permit a positive diagnosis to be made. They do not belong simply to the pretuberculous or under-nourished class and so my remarks, while having some bearing on the question of open air class rooms in city schools, are meant not to apply directly to this question, but have special reference to outdoor schools in connection with sanatorium treatment for children who already have considerable pulmonary involvement.

The building of out-door schools for pretuberculousis children is a question for the consideration of boards of education, but the establishment of institutions for the treatment and training of children with active tuberculosis to my mind is the work of sanatoria or tuberculosis associations. But the outdoor city school for the pretuberculous bears much the same relation to the school with which I have been associated for the actually tuberculous as prevention does to cure so I feel that if my arguments have any weight with this convention called to consider the question of preventive medicine it will need no further argument from me, to convince you that where possible it would have been much better to have applied the preventive measures.

This then is the ground that I shall try to cover and my remarks shall refer to our own experiences in this work, or to conclusions drawn from experience and study along this line.

Our school or preventorium was opened on January 1st, 1911, so on July 1st, 1912, had been in operation eighteen months. While this period is too short from which to draw any definite conclusions, yet our experience with these children has given us so much broader a view of the relation

*Read before the Second Annual Congress, Canadian Public Health Association, Toronto, September, 1912.

of tuberculosis to the life of man from the cradle to the grave, that I hope that what follows may be of some value to others.

The school is a party of the Mountain Sanatorium and the primary aim is to provide treatment for the tuberculous condition, while the schooling is really a secondary matter, made use of in a great part as an aid to treatment. The children are drawn from the city schools and in addition to a regular teacher they are looked after by two nurses. The Hamilton School Board pays the salary of the teacher, but in all other ways they are maintained in the same manner as adult sanatorium patients.

Taking the school age as 5 to 15 years, the highest number under treatment at any one time has been 28 children, though the number has been limited not by the supply, but by the space available. The number treated during this year and a half is as follows:

Total number admitted.....	73
Total number discharged.....	48
Number still under treatment.....	25

All our development in this work of caring for the children has been in the nature of an evolution, one step taken or one new fact learned leading to another, and I think it will be clearest to describe to you the various steps much as they actually occurred.

First, then, I may say that when we began this work we did not realize the prevalence of the disease in children and, as a result, we have space in the preventorium for but 18 beds. The real reason for the establishment of such a building was because of the difficulty of treating adults and children together. The adults could not be restrained from having their fun at the expense of the child and the consequence was that before the child had completed his treatment he was usually so impertinent to his elders that we could take little satisfaction out of our achievement, even though we might have cured his tuberculous condition.

Besides text books told us that pulmonary tuberculosis was a disease of adult life, while the more frequent involvements in children were glandular, intestinal or osseous. It was not long, however, before we realized that in children who came to our dispensary, the pulmonary type was far more frequent than the three other types combined and that when either of the other forms was diagnosed a painstaking examination would frequently disclose some pulmonary involvement as well. Thus our preventorium was soon taxed to the limit of its capacity, and during the last ten months there has invariably been a waiting list.

In the case of these 73 patients the following statistics may be of interest:

(a) History of Possible Source of Infection—

No history of tuberculosis obtainable.	43
Children from tuberculous families.	30
	73

(b) Of the 30 Children from Tuberculous Families—

1. Number in which other members of the family had been treated at the Sanatorium...	14
2. Number not receiving treatment	16
	30

(c) The cases were referred to us as follows—

1. Through school nurse.....	19
2. Through city physicians.....	18
3. Through ex-patients.	12
4. Through dispensary nurse or other methods.	24
	73

(d) Types of the disease—

1. Open cases of tuberculosis....	3
2. Closed cases of tuberculosis...	70
	73

(e) Gain in weight of the 48 discharged cases—

	Pounds.
1. Largest individual gain was.	31
2. Total gain in weight.....	432½
3. One patient lost.....	1
4. Net gain in weight.....	431½
5. Average gain in weight (approximate).	9

(f) Condition on discharge—

1. Apparently cured	14
2. Disease arrested	14
3. Much improved	13
4. Stationary	6
5. Failed in treatment	1
6. Died	1
	48

Of the apparently cured cases, one returned later with tuberculous cervical glands; the others are doing well.

Of the discharged cases with disease arrested all are doing well.

Of those discharged as much improved the majority went home too soon to get the best results and only about half have continued to improve, while the other half are about as they were when first admitted. Three of these have returned to complete their treatment.

Of the cases discharged with condition stationary all were cases whose parents refused to make the children stay against their wishes, and in some of these cases the children were so accustomed to have their own way that the parents could not see the importance of insisting upon their children obeying us.

The one case who failed in treatment was one in which an operation for cervical glands, performed a short time before her admission, was followed by acute lighting up of the old pulmonary involvement, and the child died shortly after being taken home.

The one child who died while in residence, was a far advanced open case of tuberculosis whom I had previously refused to admit because of the unfavorable outlook and whose infection dated back almost to infancy.

Thus even the two fatal cases are evidence of the chronicity of the disease after the child has reached the age of five years.

Of the 16 cases under 5 years of age examined at the dispensary during the last 18 months, we have found 11 with pulmonary involvement and 2 of them with advanced condition, but no child under 5 years is admitted to the Sanatorium.

(g) The after history is as follows:

I want the one purpose of this paper to be a plea for the protection of the child and so wish to emphasize the fact that every physician has at least an occasional case of pulmonary tuberculosis among the children under his care. What is needed is more skill in the diagnosis of early cases. In fact every physician has to progress in this respect by steps very similar to the various steps in the discovery of newer and finer methods of diagnosis in the history of tuberculosis.

Previous to the discovery of the tubercle bacillus in 1882, physical signs and symptoms were relied upon to discover only the more advanced forms of tuberculosis.

With the discovery of the specific bacillus a method of confirming doubtful diagnoses, and an aid to the discovery of open cases of tuberculosis was found. Next Koch's discovery that tuberculous patients were sensitive to tuberculin became of value in confirming the diagnosis in closed cases, and at the same time revealed the meaning of areas of dullness and of altered breathing in lungs in which suppuration had not yet taken place. But the subcutaneous test was soon found to be dangerous and it was not till the cutaneous test was introduced by Von Pirquet that any test was applied to children in sufficient numbers to be of value. But as a result of the ease and safety of application of this test a great array of statistics was soon available showing an increasing percentage of reactions as the age of the child increases.

This confirming proof again led to an improved technique in percussion and auscultation until to-day, the physical examination of the child if carefully and painstakingly performed will, together with a study of the symptoms, reveal more than any other method of diagnosis. It seems to me that the technique of the individual physician must develop by precisely similar steps. Every child we have treated had the diagnosis made by means of the physical signs and symptoms alone, and while many have later had the Von Pirquet test applied and some have been X-rayed, these tests have been positive in every case.

When I consider how incompetent I was on graduation from the University to make the diagnosis of an incipient, or even a closed case of tuberculosis, with considerable involvement, in either child or adult, I feel like urging the University

authorities to make use of the clinical material in institutions of this sort. This is the disease of which 1-10 of the average physician's patients die to-day, and surely the student has a right to a thorough training in the diagnosis of this the most common and most fatal of all diseases. It is a wellknown fact that the majority do not receive this training; though matters are improving. From my own experience I am convinced, too, that it is not the fault of the students. Several have now spent short periods at the Mountain Sanatorium and by simply starting them along right methods and then leaving them to themselves they have made surprising progress. In fact, the last gold medallist of this University was one of these students and in his short stay he made great improvement; so much so that he believes it had some bearing on his standing at the end of the year. Thus you will see the part that the study of these children has played in giving us a true appreciation of early diagnosis.

But while the facts learned with regard to early diagnosis are fairly definite, yet our ideas with regard to treatment are still somewhat unsettled and we are anxiously awaiting the appearance of literature dealing more definitely with this question. Even in the treatment of the adult case there has till recently been many conflicting ideas; some on the one hand advocating the rest treatment, and others advocating the graduated exercise treatment. But as more and more is written upon this subject we begin to see that those advocating rest have to do chiefly with febrile cases and those advocating graduated exercise have to do with cases that have passed the febrile stage and need to have their resistance and endurance increased after the period of rest so that they can return to work. In fact Patterson, of Frimley, whose name is associated with the graduated exercise treatment, apparently out-does the advocates of rest when any of his cases become febrile. Thus for an adult febrile case it may be said that "the medicine that cures tuberculosis is rest."

But the treatment of the adult and of the child are two very different matters and I certainly would not advise the physician who favors a restful life and quiet mind for himself to venture into this realm of medicine. One needs but to reflect upon the child nature to forsee the difficulties. The normal child is naturally active and its memory is short. You cannot appeal to its reason as you can in the case of the adult and the responsibility increases perhaps out of proportion to the increase in numbers.

At first we thought that if absolute rest was indicated for the febrile adult it was also indicated for the febrile child. Indeed at the outset we were almost led to believe that this method was practical, but from later experience I would judge that the normal child who can be induced to remain quiet in bed until the temperature becomes normal is very rare. The child previous to admission has invariably been allowed too great activity and as a result of the excessive auto-inoculation is under-nourished and suffers from languor or fatigue. Then for a time the child craves rest until the fatigued condition and the under-nourishment disappears.

In most cases this soon takes place and the child unfortunately appears perfectly healthy long before the lungs are completely healed; and then, with the child feeling as well as, or perhaps better than ever before, the real work commences of maintaining sufficient rest to permit healing to continue. At this time a single day of too great activity will often see a return of more active trouble in the tuberculous condition. The plan of insisting, however, during the past winter, that these children, now appearing well nourished, remain in bed until their temperatures were quite normal had the unfortunate effect of making the child's life unhappy from too much restraint, and this state of mind was not favorable to rapid healing. Thus we have been forced to compromise with them and it is in following out this method that we have come to appreciate the outdoor school so highly.

Our method now is simply to keep the child in bed until it is normally fat and healthy in appearance and until the temperature is under a fair degree of control. The school then seems to make use of some of the superfluous energy that would otherwise be used in activities of hands and feet that would surely retard healing. The period spent in school is

graduated much the same as labor is graduated where it is used as a therapeutic measure, and after the child has completed the full school period and has attained a normal temperature, short walks are commenced, and these are gradually increased until a distance of about one mile a day is reached. Even with the school it takes much longer to secure a febrile condition in the child than in the adult with a similar extent of involvement, and this is the case to such an extent that I frequently tell the parents that it takes much less time to complete the first three-quarters of the treatment than the last quarter.

Thus you will see that the outdoor school plays quite an indispensable part in the treatment of these children, and as the studies are never continued to the point of fatigue the progress made even with the short school hours is very encouraging. Probably another factor in this progress is the pure air conducing to clear minds, for progress depends more upon the amount of application than upon the amount of time spent in school. One other factor is certainly this, that several of the children are older than those found in similar classes in the city schools for, owing to illness, some of them have lost much time previous to coming to the sanatorium. In this way we are reaching a class of children whose education has previously been much neglected and who, on account of weak bodies are most in need of well-trained minds.

From what has been said you will see that the one thing indespensable on the part of the children is obedience. Disobedience cannot be tolerated, not only because we have a school, but especially because it usually takes the form of disobeying orders to remain quiet during periods assigned to rest in bed, which makes improvement of the child's condition practically impossible. The parents in this way have it in their power to make success possible or impossible, and if they refuse to co-operate by placing the discipline of the child wholly in our hands it is better for them to take the child home at once, for the results will be unsatisfactory to all concerned. But when the parents do co-operate, they are enabled by watching the progress of the child and the methods by which this is obtained, to learn many lessons that are of great value, after the child returns home, in retaining the improvement made.

But while discussing the treatment of these children, some of you may say that in the past, most of these cases went untreated and even undiagnosed, and that still very few died of tuberculosis between 5 and 15 years of age, and you may naturally ask what is the use of going to so much expense and trouble when the danger is so slight. I would say it is not that the danger is slight, but only that the immediate danger is slight.

The period of greatest mortality is from 15 to 25 years of age and it is at this period that most cases have in the past been diagnosed, for at this time the disease usually changes from the closed to the open type. In other words there is a greater tendency after 15 years for the tuberculous areas to suppurate, while previous to this age there was a greater tendency for extension and healing to proceed side by side at a rate sufficiently balanced to avoid suppuration. Thus the commencement of this period of lower resistance corresponds to the period of adolescence. It is possible then that the case which is discovered after 15 years of age, may have begun its course in early childhood and simply became evident at this later period. If so it is a serious matter to leave the cure of the case to a period when it is readily detected because of lower resistance, if it could have been detected when the resistance was higher.

Pottenger for some years claimed that the time of infection and the time when clinical symptoms manifest themselves is, as a rule, most probably separated by years; and Von Pirquet and others claim that tuberculosis, like syphilis, is a disease of three stages, first that of the infection of the regional lymph modes; second, the stage when the disease spreads to new areas; and third, the late manifestations.

Thus we begin to see that a great number of cases of adult tuberculosis must have been first infected in early childhood; and, to quote from Reviere & Morland, the very conservative figures of Hamburger, who compiled his figures from the post mortem findings of cases

that died of diseases other than tuberculosis, we find the following percentage incidence of tuberculosis at various ages:

	Per Cent.
0 to 6 Months	0.0
7 to 12 Months	4.5
1 to 2 Years	17.0
3 to 4 Years	30.0
5 to 6 Years	34.0
7 to 10 Years	35.0
11 to 14 Years	53.0

And with regard to resistance they state as following: "At the onset of life mortality keeps pace with infection, infection spells death, but when the first few years of life are past the striking fact about tuberculosis is its recoverability. The disease is of mild aspect up to the end of school years when phthisis of early adult age begins to take toll of life."

This so truly describes our findings, as shown in the statistics given, that it needs no further comment.

Thus you will agree with me that in the case of these children it is only the immediate danger that is slight. We are taking them during the period of greatest chronicity, continuing their education when this had become impossible, or at least dangerous, in the city schools, and at the same time are teaching them what is to them of far more importance, namely the means by which they may preserve their own health instead of allowing "phthisis of early adult age to take toll of their lives."

As you see by the statistics a large number of these cases was discovered through the work of the school nurse, and to me there is no stronger argument in favor of school inspection than this that every school contains an occasional child who is tuberculous, but whose condition is not likely to be discovered in any other way.

Again if you remember that at the outset of life mortality keeps pace with infection, or in other words, that the new born child has almost no resistance to tuberculosis and that it is only after the first few years have passed that the disease shows its tendency to chronicity, you will see perhaps the most important feature of all tuberculosis work, namely, that, if tuberculosis is ever to be banished, the infant and the very young child must be protected from infection. This means that no germs shall be allowed to reach streets traversed or playgrounds used by children, and that, especially, wherever a young child dwells in a house occupied by an open case of tuberculosis, either the child or the adult shall be removed to other quarters. Tuberculosis is a house infection and the most dangerous place in the house is the floor on which the young child creeps and plays. Failure to isolate advanced cases undoubtedly accounts for the infection of several of these children that we are treating, and no greater good has yet been done by our Legislature than by placing this power in the hands of the medical health officer at the last session.

Lastly, if the state has in the past been derelict in its duty in thus allowing infection of the child to occur, when recent legislation is a confession that it had the power to prevent it, it is surely the duty of the state to do what it can to repair the damage. The state educates the child but, under present conditions, many an infected child hardly more than leaves school before it falls a prey to the disease. Of what use is the education to such a child? The only solution I can see for such a child is the combined sanatorium and outdoor school.

My plea, then, is for:

1. Training of students so that, as practitioners, they are able to diagnose tuberculosis in the early cureable stage.

2. Medical inspection of the schools and chest examinations of delicate or undernourished children.

3. Isolation of every open case of tuberculosis where a young child resides in the same house.

4. Outdoor schooling for delicate children and combined outdoor schooling and sanatorium treatment for tuberculous children.

NURSING SIDE OF MEDICAL INSPECTION OF SCHOOLS*

By LINA L. ROGERS, R.N., Superintendent of School Nurses, Toronto.

The work of the medical inspectors has been thoroughly gone over by Dr. Struthers, the Chief Medical Inspector.

You can readily understand what would become of the children if they were excluded by the Medical Inspectors and no further attention was given them. Visions of truants immediately appear before you. It is for this reason that nurses are employed as a part of the great scheme of education. The nurse is the bond that brings the home and the school into close contact. She finds out the reasons why the seemingly backward child is so. There are often reasons to account for the backwardness, and the teacher learning this, takes a special interest in the child. The follow-up work is the most important work of the whole system. It is the nurse's duty to see that results are obtained, and it is left to her to find out how this can best be done.

After the medical inspectors' routine inspection at midsummer, Christmas and Easter, the nurse makes all the subsequent inspections at intervals of every two weeks and takes this opportunity to give instruction on general cleanliness. She becomes acquainted with every detail of the child during these frequent inspections, and learns much about each one that would otherwise not be known. During her visits to the home she becomes a friendly adviser of the parents, learns by her sympathy and interest a great many things that would not be admitted to a casual visitor. It is during these visits to the home that a reformation is brought about. Fathers and mothers who never used a tooth brush are doing so now, because the nurse explained that a clean tooth never decays and that it was intended that we should care for the teeth, as we do for any part of the body.

This is the first factor in prevention of disease. If on visiting a home to instruct the parent about having a child's eyes tested, the nurse finds a case of tuberculosis, she immediately reports it to the Health Department and aids in getting sanitarium treatment or to have a district nurse visit regularly. She helps to get the family in better surroundings. If the father is out of work the nurse reports the circumstances to the Associated Charities and work is procured. If the children have insufficient clothing she sees that it is provided from one of the school centres, where clothes are stored by the Board of Education for the needy children. If glasses are required, data concerning the family is reported to the Superintendent of School Nurses, who decides whether they are able to provide them. If not, the Board of Education pays for them.

Sometimes a parent refuses to have anything done for a child who is really suffering for want of medical or surgical attention. Such cases are referred by the nurses to the Juvenile Court and prompt action is taken. The parent is shown that if he refuses to have the child receive the care it requires, the State steps in and demands a birthright for the child.

Unsanitary conditions found in the homes by the nurses are reported at once to the Health Department. Concealed cases of Scarlet Fever, Measles and other diseases found are reported in the same way. Some physicians have learned that discretion is not the better part of valor in these instances. Cases where children were playing on the street when they were supposedly under quarantine have been brought to the notice of the Health Officer. The law is enforced and the other children protected.

The nurses have taken different cases to the Morality Department, when the father has been abusive to the mother and children, and sure results have followed.

Such work must necessarily have a very decided effect on the community and it is gratifying to know that the civic authorities are taking this large interest in the social welfare of their citizens.

Our duties are not simply to cure the ills we have already acquired, but our whole aim is "prevention." We want to build up a nation whose men and women will be physically and mentally

*Read before the Second Congress, Canadian Public Health Association, Toronto, 1912.

sound. The strength of a nation is in its children.

It is the duty of the nurse to see that the school children under her charge are in as good a condition of health as it is possible for them to be, but I would go a step farther and say that I hope the time is not far distant when the Board of Education will require the school nurses to begin the education of health with the birth of the child.

My vision for the future is a system where the nurse will have one school and a circumscribed area of homes to visit. That it will be her duty to teach hygiene and everything pertaining to health to every family in that area. Then we shall have the kindergarten child well along the road to sound health when he enters school. Such a thing as concealed cases of contagious disease will not be known. Tuberculosis will be discovered. Drunken and thriftless parents will find that it is far easier to get to work and provide for their families than to encounter the nurse.

Finally there will not be any duplication of visitors in the home. Everything will be reported to the proper authorities for regulation and the social status of the community will be a power for good.

That the school nurse as a social service worker is being more widely recognized all the time is shown by the demands that are now made on her time by those with whom her work brings her in contact. To give an example: Recently a woman with a large family, weary of the struggle with poverty and other domestic worries took her own life. The oldest girl left in charge was only fifteen. The mother's brother living in an American city and interested in public school work, came to Toronto at the time of her death. Seeing the home conditions he was worried lest in the coming winter the children should suffer actual want. Not knowing from whom to ask reports concerning the family he went to the principal of the Public School and asked him his advice. "Why, yes, we can help you," was the reply he got. "Our nurse will gladly see the family occasionally and send your reports." Her address was given the man and a sum of money was deposited in charge of the Principal, which on the nurse's report will be expended on necessities thatthe children might otherwise have to go without.

UNEMPLOYMENT AND THE PUBLIC HEALTH*

By B. SEEBOHM ROWNTREE, J.P.

We may define unemployment as "the inability of persons who are seeking work for wages to find any suited to their capacities, and under conditions which are reasonable, judged by local standards." This definition rules out people who wish to work on their own account, persons temporarily ill or chronically infirm, and also those who, although they may nominally be looking for work, are by no means anxious to find it.

I do not attempt to show exactly the extent of unemployment, since the most competent statisticians have failed to arrive at a satisfactory basis of estimation. It will, however, be safe to assume that on the average for good years and bad, good seasons and bad, there are not less than 500,000 men involuntarily idle.

The Economic Loss.—Now this mass of unemployment, though we have become so accustomed to it that we often ignore it, must represent a serious drain on the resources and vitality of the nation. If we estimate that on the average the men are probably capable when in work of earning at least £1 per week, we arrive at £500,000 per week, or £26,000,000 a year, as the immediate loss in wages; and the sum thus named does not represent the total loss, because for every worker out of employment there is an equivalent in capital and land (or raw material) lying idle, yielding no profit to the owner. The indirect losses are even greater. Each period of unemployment, unless of very short duration, impairs the industrial efficiency of the worker, and his earning power.

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Often, to avoid starvation and the breaking up of their homes, men will accept inferior jobs, and in this way jeopardize both their industrial efficiency, on which perhaps many years of training have been spent, and their chance of rising again to their former position. Moreover, the army of 500,000 is not composed of the same individuals day after day, but varies perpetually as men lose and find employment; and thus periods of reduced income, and often of acute want, affect a far greater number of families in the course of the year than would appear at first sight.

How Far Is Unemployment Caused by Ill-health?—No figures on a national scale exist to enlighten us on this question. It is rarely possible to say in any particular case whether a man at present unable to find work, because physically handicapped, has been brought to this condition through hardship consequent upon past unemployment, or whether some physical or mental defect was connected with his losing his last job. Two years ago, however, with the help of others, I made careful inquiries in York into the history of a large number of unemployed men; and, as far as we could ascertain, about 10 per cent. of the men who had within two years been in regular work were disqualified for recovering it by physical defects. Of these 10 per cent., 3 per cent. were also handicapped by faults of character, such as laziness and intemperance. Among the casual workers, nearly one-quarter of those out of work at the time of the enquiry were defective, 12½ per cent. only in physique, 11½ per cent. both in physique and character. Among men previously engaged in the building trades, more than one-fifth were physically defective, and two-thirds of these were also of poor character. However little weight we attach to statistics based upon judgment rather than fact, there can be no doubt that in a large proportion of cases physical handicaps, more or less severe, play an important part in the inability to secure work.

Among boys under 19 years of age we found many whose unemployment could be directly traced to ill-health and neglect. At school their teachers had generally predicted unsatisfactory industrial careers for them. Defects of eyesight, mental dulness (due sometimes to neglected adenoids, anaemia and general lassitude), bone diseases which might have been remedied at an earlier age, underfeeding at home; in short, a whole list of unfavorable conditions had been present in childhood.

It must not be thought, however, that those who are handicapped by ill-health or poor physique are therefore incapable of all work. If only a suitable occupation could be found the majority of them could be employed. As a matter of fact, we did not include in our survey those who were temporarily or permanently unable to support themselves, such as hopelessly crippled and deformed persons. The majority of those among the unemployed whom I have described as physically defective are merely not strong, i.e., unable to undertake hard muscular work. With a well-developed national system of labor-registration, it might be possible to reserve certain kinds of light work for men and boys of this type, who are otherwise satisfactory. But their number could be greatly reduced if forethought were applied to the problem rather than afterthought. With proper preventive measures, the number of feeble, defective and unhealthy persons among the workers could undoubtedly be considerably lessened.

Effect of Unemployment on Health.—We have already considered the immediate economic loss to the nation due to unemployment. But the indirect loss, affecting it through the lessened vitality of the people, is perhaps even more important. As evidence of the effect of unemployment on the families concerned, Miss May Kendall has obtained for me a number of budgets of household income and expenditure, kept in each case for four weeks while the main breadwinner was out of work. Of eight families for which these particulars were obtained I found that the best fed had only two-thirds, and the worst fed not more than one-third of the nutriment necessary to maintain physical efficiency. The standard adopted is that of Professor Atwater, 125 grains of protein and 3,500 calories of energy value per man per day.

In the eight families, eighteen children were affected, and for the whole country the number of children thus handicapped by malnutrition from the very outset, sub-

sequently to appear in our lists of unemployables, or physically defective, must be enormous.

The effect of malnutrition on tuberculosis is well known. This is a disease of poverty in so far as it seeks out those who are anaemic and weakly. The first thing a medical attendant does to arrest this disease is to prescribe blood-and-flesh-forming food.

The lack of nourishing food is also a potent cause of infantile mortality. From ill-nourished mothers one cannot expect a generation of healthy children, especially if their chances are still further curtailed by the substitution of the bottle for the mother's too scanty supply of milk. Dr. Newman's book on Infantile Mortality is full of evidence on this point, and efforts are being made in York, as in many other towns, in connection with Infant Consultations, to save the children by the provision of nourishing food for nursing mothers.

As far as the unemployed person himself is concerned, a few days of starvation now and then would not be as injurious to him and to his chance of employment as is a long-continued period of malnutrition. Of the unemployed men in York who had been in regular employment, half were found to have been out of work for more than six months. Among the casual workers, short periods of comparative plenty alternate with periods of want, a condition under which no reasonable regime of diet can be expected.

And malnutrition is not the only source of evil in this connection. You will all know how difficult it is for the authorities to apply the whole rigor of the law in the matter of overcrowding, since the plea of unemployment so often makes it impossible for them to deal harshly with those who come before them for this offence. It has been observed, especially in London, that at times of trade depression, the lowest classes of labor become very migratory, because the laborer cannot afford to pay rents. But the subsequent artificial increase in the demand for dwellings tends to raise rents, thus leading to still further overcrowding. This difficulty emerges whenever the improvement of insanitary areas is contemplated, because it is impossible to rehouse the tenants in decent houses, the rent of which they can afford.

Moral Deterioration.—We are often apt to blame the poor for their want of thrift, their intemperance, and their neglect of parental duties. But do we always appreciate sufficiently the conditions underlying their lack of stamina and their moral indifference? I have been impressed, in my study of so many cases of unemployed in York, by the apparent irresistibility of the forces which make for moral deterioration. When the bodily strength has been undermined by malnutrition, when natural appetites can find no satisfaction, can we wonder that the will succumbs to the temptation of drink? Even when unemployment only lasts a short time, the haunting sense of not being needed is enough to upset a man's moral balance. The boy criminal is nearly always a boy out of work, and the petty thief who is sent back after a brief imprisonment to the same unhealthy environment often becomes an inveterate enemy of the law, because both his desire and his capacity for honest work have been gadually undermined. Or take the case of those who, after a short period of unemployment, have been compelled by poverty to undertake inferior work at worse wages. How soon their self-respect is undermined, and all their standards of comfort and even decency sink to a lower level.

In short, it is impossible to exaggerate the serious effects of unemployment on national health and character. While I cannot, in this paper, give a full statement of the problem and a complete list of desirable reforms, I may briefly outline some of the remedial measures which my study of the subject has more especially suggested.

Suggested Measures.—In the first place, it is of paramount importance that preventive measures should be taken before the industrial career has actually begun. Every effort to improve the health of school children, even to giving the babies a better chance, will reduce the risk of unemployment due to physical defects. What these measures should be is discussed, with more authority than I possess, in another section of this Congress. But I feel sure that however valuable the

work of medical inspection, of school clinics, and of special classes and schools, the organization of Care Committees in connection with the schools is also indispensable. Not only can the workers of Care Committees see to it that medical recommendations are carried out, but they can exercise a wholesome influence on the homes of the children which may gradually raise the tone of a neighborhood. They can also see to it that all the circumstances of children treated for physical defects are taken into account, and, as far as possible, improved wherever necessary. Where, however, homes absolutely refuse to co-operate, there should be greater readiness among magistrates to send the children to day or residential industrial schools. Such cases, of course, will always be exceptional. The help and encouragement given by a sympathetic and conscientious visitor will generally stimulate the parents to that renewed interest and care without which there can be no improvement.

Care Committees can also fulfil an important function in helping lads to choose their employment wisely at the very outset of their industrial careers. Even though the first employment may be exchanged for another, some supervision over its choice, and over subsequent decisions, is necessary to avoid the dangers of "blind-alley" occupations. The period of unemployment, often a prolonged one, to which the juvenile worker is liable, when he is too old to work at boys' wages but has learned no trade since he left school, may affect his whole life in the most disastrous manner.

I do not imagine, of course, that continuous employment throughout the years of adolescence, with an assured prospect of remunerative work later on, can be secured for every juvenile worker as our industrial conditions now stand. But it is possible to arrange that no boy should be idle for any length of time without proper supervision; in other words, that no lad below, let us say, the nineteenth year of age should be permitted to idle in the streets, or to support himself by occasional catch jobs.

Recently I have been elaborating a scheme for the compulsory daily attendance at continuation classes of all unemployed lads under 19 years of age. I cannot now enter into its details, but it includes the provision, when necessary, of a substantial meal a day for lads whom it prevents from accepting mere catch jobs. There is no industry of any consequence which depends on casual boy labor for its operations, and no serious hardship will thus be inflicted on any section of the community by its prohibition. At the training school the unemployed lad will gain in mental equipment, in manual dexterity, and, by the aid of graduated drill and gymnastic exercises, in physical strength. Thus, his inability to find regular work may be converted from a serious danger into a splendid opportunity of preparing for his industrial career, and reducing the risk of unemployment at a later age.

In dealing with the unemployment of adult men, I believe that much seasonal unemployment, and to some extent unemployment at times of trade depression, might be avoided if public authorities, national and local, took care so to arrange their work that the maximum of employment given out by them coincided with the slack times of the prevalent industries.

Next, to prevent the terrible physical and moral deterioration arising from casual labor, a determined effort should be made to lessen as far as possible the number of men employed irregularly. In many industries, such as the building trades, such casual employment seems the unavoidable result of the conditions under which the men work. But I could give many instances of cases where the full employment of a few regular men could easily be substituted for the occasional employment of a larger number. Labor exchanges, if universally made use of, could reduce the evils of casual labor to a minimum.

My next suggestion is one which has been before the public for some time, namely, the afforestation of vacant lands on a great scale during times of trade depression. The Royal Commission on Afforestation and Coast Erosion, a few years ago, reported that there are, in Great Britain about eight and a half million acres of land suitable for afforestation, which now return little or nothing. If this area

were planted, work could be found immediately for over 50,000 men, and eventually for nearly 200,000 for four months each winter, in addition to a permanent staff of over 20,000. The numbers employed could be regulated according to the state of industry, since much of the planting, and later on, much of the felling, could be reserved for periods of widespread unemployment.

Lastly, in thinking of the great number of men who, in spite of all the measures which I have named for the prevention of unemployment, as well as more drastic economic changes, will still grow old and become partially disabled, will still have to stand aside during frost and rain, will still be subject to fluctuations in fashion or changes in the methods of production, I advocate another measure which should help families to tide over periods of unemployment without hardship and without physical and moral deterioration. Insurance against the risk of unemployment, while good so far as it goes, cannot possibly cover all these cases. A seasonal unemployment, for instance, recurring for a considerable length of time year after year, does not constitute an insurable risk except in so far as the wages earned during the seasons of activity may be sufficient to pay for more than the immediate wants of the household. And, as a matter of fact, it is among the seasonal and casual labourers that wages are among the very lowest. Yet it is the worst possible economy for a nation to allow its workers to deteriorate. It is fatal financially, industrially, and from the standpoint of the public health. A manufacturer who allowed his machinery to deteriorate while temporarily out of use, would be considered a very bad business man. A scheme, therefore, is required for keeping labor in a state of efficiency, ready for immediate use, during those weeks or months in which it is not needed. Such a scheme I have found in operation in Belgium, where vast numbers of the workers employed in towns reside in the country, cultivate their own plot of land, and bring up their families in fresh air and wholesome environment. The more I have studied this state of things in Belgium, the more I have become convinced that it lessens not only the evils arising from unemployment, but also its occurrence, and that its benefits in other directions also are far-reaching. Suppose, for the sake of argument, that a great extension of the small holdings movement, and by the provision of adequate transit facilities, we could reverse the proportion of workers residing in town and country in England, i.e., have three-quarters of the population living in rural districts instead of one-quarter, as at present. House rent would be substantially lower, and, for the same rent he now pays, the worker could occupy a good-sized garden or allotment as well as reside in a better house and pay for the moderate cost of traveling to and from his work. In this country, compared with Belgium, we do not yet know what cheap fares for working men mean.

All the gardens would be of economic value, though in varying degree. The average net proceeds from twenty-four industrial workers' allotments in York, carefully worked out for three years, amounted to £31 per acre. This includes the work of novices, and, with better facilities for horticultural training and practice extending over more than one generation, the average might well reach £50 per acre, a figure exceeded by many of the York allotment-holders; so that, if we plan as many as twelve allotments per acre, the proceeds from each would attain a value exceeding £4 per year. If we give to each family a quarter of an acre, we could reckon an annual addition to their income of £12 10s., or about 5s. per week. This addition would only partly, if at all, come in the form of money, but would represent a most desirable supply of vegetables and fruit, of potatoes and perhaps bacon and eggs and cow's or goat's milk. The less perishable of these commodities just furnish that little reserve of wealth which tides over temporary difficulties; they provide an insurance against the risk of unemployment, the amount of which depends on the man's own industry, and which leaves out of account the reasons why he left work, or why he cannot find fresh employment. While the man was in regular work he would cultivate his plot on Saturdays and holidays, with considerable help in the lighter work from his wife and children.

and such minor exertion as he could give on week-day evenings. When he falls out of employment he can either bestow more work upon his own piece of land, or find odd jobs among the farmers of the neighborhood and his neighbors of his own class. Thus, instead of walking aimlessly from gate to gate, or from dock to dock, or sitting for hours in the waiting room of a labor exchange, he can keep himself in physical vigor and retain his self-respect.

It has lately been said, by several authorities on agricultural development in this country, that nothing could more surely and more rapidly revive the somewhat sluggish life of our agricultural districts, and stop the migration of rural laborers to the towns, as the influx into the villages of a large number of men who work in the towns and return at night. Thus the benefit would be mutual. Rural England would once more fluorish and take a fresh lease of life, while the slums of the town would be dispersed, and with them the conditions predisposing to unemployment.

Discussion.

Alderman J. P. Hurry (West Ham), said that the working in conjunction of the labor exchanges with the committees of the choice of employment should tend to improve the condition of boys and girls just leaving school, making it possible for them to take up the trade they were most suitable for; and also to the care of them during the time they were waiting for a situation. The general body of casual laborers needed some special treatment. They were usually classed by the people who knew no better as "won't works," but he was quite confident that, given the opportunity, they would become quite as good citizens as any other peopel.

Councillor David Williams (Swansea) said unemployment was a cause rather than the effect of physical, moral, and mental deterioration. The present method of production demanded that there should be a margin of unemployed persons; first, because, in the engineering and shipbuilding industries, particularly as regards repairs, the nature of the work made it impossible to determine at any time the number of men required to deal with the work. The same applied to most other seasonal trades, andtherefore, so long as the system demanded that this should be so, there should be national responsibility.

Councillor Brogan (Battersea) thought that Mr. Rowntree should include the feeding of delicate children, and that the Government should be asked to pass a bill compelling local bodies to supply milk to delicate children at a very nominal cost. Mr. Rowntree said that it was almost an impossibility for the children of the slums to rise, but he could point to a York slum, where he was born, in Walmgate, and today there were three London schoolmasters, two mistresses, two managers, two foremen, one highly-salaried civil servant, and one Battersea borough councillor who were among the children brought up there. They were the descendants of the men and women driven from Ireland by the famine, but the old blood had asserted itself, and in spite of their surroundings they had risen again in the world, and had grown up strong and healthy citizens.

Alderman Joseph C. Julyan (Poole) said that in considering this subject they wanted to ascertain the causes of unemployment and the remedies. He believed one of the causes of unemployment to be found in the fact that lads did not properly learn their trades, owing to the decay of the apprenticeship system. Large numbers, as soon as they knew or thought they knew enough to get through, left with a view of earning more money, and soon found themselves stranded through incompetence. Mr. Rowntree advocated drill, etc., for lads up to 19 years of age. He would go further, and support the objects of the National Service League. This would insure medical inspection of all lads at 18, and there could be no two opinions as to the value of such an inspection and training on the lads themselves. He also thought some of the money at present wasted on education might be used to give boys and girls manual training in the schools to a much larger extent than at present. In order to deal with the defects found in school children as the result of medical inspection, much larger support should be given in the shape of

grants by the Exchequer, as without this the treatment required could not be obtained. It would have been much better had the Government followed up and perfected this work before embarking on the national insurance scheme.

THE USE OF TYPHOID VACCINE.*

By GEORGE A. GRAY, M.D., Spokane, Wash.

From time to time I have been asked by my associates my opinion regarding the use of typho-bacterin in the treatment of typhoid fever. At present there seems to be a concensus of opinion among the leaders of the medical profession that typho-bacterin, properly used, will prevent typhoid fever. At any rate, the typhoid vaccine will confer a certain immunity to the infection of typhoid bacillus. The length of the immunity lasts from six weeks to two years, but it is not well established the exact period that this immunity covers. It is also of interest that one patient, who received a vaccine injection of five hundred million of dead typhoid bacilli, later came to the hospital and remained there a period of thirty days suffering from typhoid.

During the past three and a half years I have been in the employ of the Oregon-Washington Railroad and Navigation Company, being in charge of all the construction camps in Eastern Washington. You may ask why all workmen in these camps in 1911 were not given immunizing doses so they would not contract typhoid. The answer is that, when you speak of vaccinating them against typhoid, they think of vaccination to prevent smallpox, and one-half refuse. The other objection was, that the men are of such a roving nature that the average length of employment is about five days. I attempted the vaccination without cost to the employee or employer but only a very small percentage of them would accept the treatment.

Among the profession generally there is no fixed opinion regarding the use of typhoid vaccine as a therapeutic agent in the treatment of typhoid fever. Some physicians have used it enthusiastically, recommending it, others equally as competent say it is useless, yes, even worse, that it is harmful.

What I wish at this time is to record a series of 198 cases that have come under my observation during the years 1910-12, treated in four different hospitals at North Yakima, Sprague, Sacred Heart Spokane General. There is no desire to take credit for any special vaccine used, but to record the fact that it was used, and to compare the results in those treated with and without the vaccine. A stock vaccine was used, containing one-billion dead bacilli to the cc, and this preserved in kresol. Before attempting the use of the vaccine as a therapeutic measure, several weeks were spent looking up literature on the subject, and the largest number treated by any one man by vaccine therapy was thirtyseven.

No attempt was made in the diagnosis to made a Widal or diazzo test, the diagnosis being made entirely from clinical symptoms; from the examination of the abdomen, spleen, temperature, pulse, rose spots, characteristic typhoid odor, headache, backache, malaise and odor of stools. The diagnosis was changed, as necessary, after five days of observation, so there is very little doubt as to its correctness. By no means were all patients, sent to the hospital with a diagnosis of typhoid fever treated as such, but these patients that are reported were typhoids. It must also be considered that typhoid varies in severity the same as measles, smallpox, diptheria, scarlet fever, and all contagious diseases, and probably the only excuse for this resume is the number of patients treated. Also you are to bear in mind that, with two exceptions, all these patients received only ward care.

Regarding the severity of the contagion of cases in 1911, before starting the use of vaccine in May, June and the first twenty days in July, I treated twelve patients with three deaths, the other nine recovering remaining in the hospital 284

*From the Journal-Lancet.

days, or an average of 31 5-9 days per patient. Two patients infected from the same place, the Palouse and Snake Rivers, came to Spokane and were treated by other competent physicians and died. This is only related in order that you may know that this contagion was not of a mild character.

Treatment in all cases was liquid diet, broth, bouillon and buttermily when well borne, cold baths when the temperature was more than 102°, a mild cathartic or enema so that the bowels moved well every day, and the mouth and teeth cared for. The drugs used were salol, gr. 3, q. 3 h. or sodium salicylate gr. v., q. 4h. Castor oil was used as a laxative when well borne. Salol and sodium salicylate were always discontinued at the end of ten days. Complications were treated as they arose.

One hundred and twenty-six patients were treated with vaccine during the latter part of 1911, of whom 121 recovered, remaining in the hospital 3,210 days, or an average of 26½ days per patient. Those not recovering were five, in the hospital 53 days, or an average of 10 3-5 days before death, the cause of death being profound toxemia. The mortality was .039 per cent.

Altogether 72 patients were treated without the use of vaccine. Thirty-five were treated at the Sacred Heart Hospital in 1910, 2 dying, 33 recovering, in the hospital 1,157 days. Nineteen were treated at North Yakima, St. Elizabeth's Hospital in 1910, 2 dying, 17 recovering, in the hospital 562 days. Six were treated at Sprague, in 1910, all recovering, in hospital 174 days. At Spokane General Hospital in 1911, were 12 patients, nine recovering, in hospital 284 days. A total of 65 patients recovering, in hospital 2,177 days, an average of 33½ days per patient and 7 deaths, or .097 per cent. mortality.

Without the vaccine were 33½ days, as compared with 26½ days in the hospital with the use of the vaccine. The mortality without the vaccine was .097 per cent., compared to .039 per cent. with its use, a gain of 7 days in the length of treatment and .058 per cent in the mortality.

It is not my intention to lead you to believe that typhoid vaccine is a panacea for typhoid fever after the typhoid is contracted, but, rather, that it is an exceedingly valuable therapeutic agent, lessening the length of the disease and ameliorating the symptoms of this condition. I believe the sequelae are much lessened, and that the danger of phlebitis is much less; that the danger of pleurisy and a lighting up of a dormant tuberculous infection is lessened; and in no case do I know of any tuberculous trouble being contracted during the time of the patient's continuance in the hospital for the treatment of typhoid. Of these 126 cases treated with the vaccine there was only one case of phlebitis, and no patient died of hemorrhage or perforation. Only one or two had boils or carbuncles and the trophic condition of the skin was much improved. There was also a great lessening of the mental symptoms. Several physicians who visited my patients in the wards remarked that they had never seen such cheerful typhoid patients; that they were brighter mentally; that their tongues were cleaner and the poisoning by the toxins was much lessened. There was little or no twitching of the muscles and delirium was lessened and, except in about one-half dozen cases, restraints were not necessary.

No attempt is made to report how long these men were ill before coming to the hospital for treatment, but, if the patient had been ill two weeks before applying for treatment, in nearly all cases this did not shorten the time in the hospital but rather lengthened it. By this I mean, if the ordinary run of fever was four weeks, if the patient remained in camp two weeks, his vitality was so lowered that he did not respond to the treatment and thus remained in the hospital much longer than if he had been treated shortly after being taken ill.

I consider the typhoid vaccine simply a stimulant to the human organism, and, if injected into the body, produces some change in the tissues or fluids that will tend to limit the life and growth of the typhoid bacilli. Typhoid, like measles, diphtheria, scarlet fever, etc., is a self-limited disease. If the organism is sufficient to cope with the invader and no complications arise, the patient will recover. Anything that can be done to produce this

stimulation of the organism should be used. In fact, my belief of the use of typhoid vaccine is that the injection of the typho-bacterin stimulates the growth of antibodies in the lymph or tissues of the body, and shortens the time that the typhoid bacilli will continue to reproduce themselves.

The method of using the vaccine therapy was not constant and, as my experience in its use increased, my ideas also changed. I began by giving about two hundred million every third day, later fifty to one hundred million every second day. But my late experience is that two hundred million given every second day is the best, but much depends upon the condition of the patient. If the toxemia be great, use the smaller does; if slight, then the larger dose.

The vaccine was injected into the muscles of the gluteal or deltoid region and, though about one thousand injections were used in the 126 patients, not one abscess occurred. The average mortality in the hospital records is about 10 per cent. About five hours after the injection the patient's temperature was increased, but in two days it is better than previous to giving the vaccine.

From the above experience, I believe typho-vaccine is a valuable therapeutic measure in the treatment as, on an average, it will shorten the disease by about seven days, and the period in which the patient can return to work by about fourteen days. It lessens the mortality by about 50 per cent. The sequelae are less, the mental condition better, and all the symptoms ameliorated.

THE FUTURE OF THE PUBLIC HEALTH LABORATORY.*

By H. W. HILL, M.B., M.D., D.P.H.

Director Institute of Public Health, London, Ont.

The public health laboratory as we know it to-day began its career about 20 years ago. It had had its predecessors—chiefly along chemical lines. It was wholly natural that chemistry should rule in those earlier days, first because chemistry was the only analytical weapon that they had, second because the epidemiological teaching of the day placed the sources of disease upon environment, upon the effect of chemically bad air, chemically bad water, chemically bad food, etc. The laboratory man, like the engineer was, and is to-day, moulded and directed by the teachings of those who deal more intimately with disease in the mass than he does. To-day we realize that the serious impurities of air, water, milk, food, apart from such gross poisons as arsenic, illuminating gas, lead, alcohol, etc., are not chemical but biological, and that the chemical impurities of foods and drugs in 99% of cases are of far greater injury to the pocket book than to health.

The development of bacteriology placed the public health laboratory not only on a sound basis but created it for a time the great leader and guiding light of public health work. The older ideas were slow to give way—the laboratory man of ten or fifteen years ago was a fighter, a general, leading campaigns against prejudices and honest ignorance, often with but partial knowledge himself.

He had the nucleus of sound knowledge but made many mistakes because of his confinement to the laboratory, his lack of touch with the great outside world which his efforts were to serve. This, and the over-enthusiasm of some non-laboratory men who took up the laboratory standpoint with even more vehemence than the laboratory men themselves, resulted in some errors. I need not here review even briefly the immense researches into terminal disinfection, the tremendous importance assigned to securing the exact amounts of the various gaseous disinfectants which should be used to kill various bacteria in various lengths of time and under various conditions of temperature and humidity. The battle raged long, loud, earnestly. I myself was deeply involved in it. This work related to efficiency in killing bacteria in rooms occupied by infected persons. We learned every

*Read before the Second Congress of the Canadian Public Health Association, Toronto, 1912.

trick of the gases, every subterfuge of the bacteria. We found how and when to kill—the maximum results from the minimum expenditure. But we did not ask ourselves—we did not know enough about things outside of the laboratory to ask ourselves—what good does disinfection do? We were so sure that it was a good thing that Chapin's question to this effect fel llike a bombshell. He alone and in the face of a storm of indignant even scornful opposition kept repeating the question "Does disinfection reduce disease? If not, why disinfect?

It is all an old story now—I introduce it merely to show the great drawback of laboratory work—the losing touch with actual conditions in the big outside world. You will remember that Chapin convinced himself that terminal disinfection was not useful in smallpox, scarlet fever, diphtheria—that taking his courage in both hands, he faced the storm and abandoned it in Providence for these diseases—and that instead of increasing, scarlet fever and diphtheria actually fell off a trifle when terminal disinfection was no longer done.

Careful scientific laboratory investigations must yield accurate and reliable results—so far as they go. But the important question is, how far do they go—how often are laboratory conditions a true replica of outside conditions? We all know that water in a water sample bottle gives the contained bacteria a chance to multiply at a rate far exceeding the rate at which they would multiply in the same water left under natural conditions in the pond or stream from which it came. To count the bacteria in the water thus torn from its natural surroundings and kept under abnormal conditions in the laboratory is no better and no worse than it would be to tear the heart from a patient, ship it to the laboratory, and regard its heart beats in a beaker as a true indication of the patient's former condition.

What then is the remedy? How is the laboratory man to maintain both his technical skill which comes alone from constant close attention to minute laboratory details, and to keep in touch with nature outside the artificial conditions his laboratory necessarily and unavoidably imposes? He cannot go far from his microscopes, petri dishes and test tubes, his instruments of precision. True, but why not take them with him?

The public health laboratory must, to my mind, go forward or backward; it is too valuable an instrument of public health progress to allow retrogression. I believe the laboratory man must do just what the modern man in business, in education, in everything does now—not try to force his world to come to him—but take himselg to his world. He should no longer try to force the world into his laboratory—he must carry his laboratory with its great powers for good, into the world. The world is "awful big"—and otherwise will go its own way unknowing and uninfluenced, to its own harm.

What is the practical basis we must reach? The laboratory of the future, to my mind at least, will find its greatest usefulness in co-operation with the great new factor in public work—the essentially direct and immediate field work of epidemiology. The laboratory staff can rarely be epidemiologists themselves—for mere lack of time to achieve and maintain real expertness in both fields. But the laboratory man and the epidemiologist must understand each other and each other's problems. The man of the microscope and the test tube should know by personal experience the actual conditions; and the field man—the epidemiologist—should know by personal experience both the possibilities and the limitations of the laboratory. Then each should supplement the other. The epidemiologist's duty is to see with his natural eyes the actual gross constituents of each problem—to learn by epidemiological methods the interplay of sociological relations and forces which have resulted in a certain situation, and given rise to public health disaster. The laboratory man can see more deeply if less widely. When the crucial points are found by the epidemiologist the laboratory man can bring his especial powers to bear.

Of definite problems for the laboratory of the future I shall say little. The infectious diseases, even those whose biological causes we do not know, can be handled now so perfectly without knowing the cause that the discovery of the scarlet

fever or measles organism would help us, from the public health standpoint, very little, however much it might do for therapeutics. This statement illustrates the fact as I believe it, that the laboratory as an institution for daily routine work has already reached its maximum of efficiency unless some new view point arises.

I believe that the laboratory has done all that it can in infectious disease from the administrative standpoint, except in the venereal disease, and perhaps tuberculosis and that research is its chief function now—in which I am but repeating the teaching of Chapin. Along what lines should that research extend? The venereal diseases first—and after that, the non-infectious diseases. We must not suppose that the infectious diseases are the only preventable ones. The Public Health laboratory must not loose sight of its practical applications today. A certain amount of routine work will always be required; but to restrict the labroatory to routine work would destroy all incentive to progress. It is in research that the Public Health chemist as well as the Public Health bacteriologist, will find the true fields of the future. Physiological chemistry, especially, will have much more to say in Public Health in the future than even the water analysts have had in the past.

Koch Bacillus Is Ordered to Leave.

The Citizens of Quebec,
Plaintiffs;
vs.
The Microbe of Consumption and Others,
Defendants;
and
The Anti-Tuberculosis League,
Mise en cause.

—

Oyez, oyez, the court will now convene.

(The Microbe of Consumption is called to the witness box and is examined by Mr. Goodhealth.)

Question—What are your names and surnames?

Answer—Physicians call me Koch's Bacillus, but by the public I am known under the name of "the microbe of consumption."

Q.—Does the particle "de" added to your name by these good physicians indicate that the latter think that you have any title of nobility?

A.—Not at all. In my case, appearances are deceptive. The thousands of millions of my antecedents are lost with time. During centuries, we have carried out incognito and quietly our work of destroying human life.

But in 1882 a slight accident happened in our family. We were, like America years ago, discovered. . . . but by a worthless German fellow named Koch, who had the audacity to call us Koch's Bacillus. In place of keeping his secret and accumulating a fortune at our expense in having us "patented," he made his discovery known to the "Press." As a natural result our existence was known to the entire world on the following day.

Claim Persecution.

Since then we have been the victims of all kinds of persecutions. In every country throughout the world where we reign as masters, thanks to our great numbers, a campaign has been organized to destroy us. In Germany, France, Denmark, Sweden, Norway, England and in the United States and at last in Canada, associations have been organized which, by means of dispensaries, sanatoriums, open air classes, healthy lodgings, etc., have made efforts to thin our ranks and lessen our means of action.

Physicians at the head of this movement, aided by a multitude of philanthropists, have been pursuing us in the dark rooms of the unhealthy lodgings where we had taken refuge.

We have been accused of all kinds of misdeeds. Thus, it has been alleged that, causing cows to be affected with tuberculosis, or by polluting their milk, we were responsible for the death of thousands of young children and that we were trying to replace the St. Jean Baptiste procession, by processions of white coffins towards the cemeteries.

In Combine With Alcohol.

Our prosecutors allege that we have organized with the god of alcohol a merger combine trust. The god of alcohol undertook, first of all, to weaken the human or-

gans on condition that we, Koch's Bacillus, would afterwards penetrate in the weakened organs to sow death. Our detractors pretend to be able to prove by statistics that we choose our victims at an age when they are very useful to their families and to their country, that is to say between 20 and 40 years of age. They even go so far as to say that we urge consumptives to spit on the floor, everywhere, in churches, schools, theatres and factories, so as to freely transfer this spittle with the dust in the air, thereby easily entering the lungs or other organs of people who, up to then, were in the best of health.

This systematic persecution has forced a large number among us to leave our original country to find a refuge elsewhere.

Find Quebec Hospitable.

That is why a certain group, of which I am the humble representative before this court, came some time ago to establish its quarters in Quebec, where we depended on the proverbial hospitality of Quebecers to extend our forces and increase our numbers in peace and abundance.

However, a few years past the persecution, of which our brethren have been the victims elsewhere, commenced here thanks to the zeal displayed by our enemy, the Quebec Anti-Tuberculosis League.

This is the reason we come to-day before the supreme tribunal of public opinion to ask for aid and protection.

The Anti-Tuberculosis League followed Koch's Bacillus in the witness box and was put through an interrogatory by Mr. Goodhealth.

Question—What is your name?

Answer—I am called the Quebec Anti-Tuberculosis League.

Q.—What is your age?

A.—I am barely three years of age, but I could be taken as a person of thirty, if my strength and the work I have already accomplished is taken into consideration.

Q.—What is your occupation?

A.—I was brought to life by a group of disinterested citizens who had at heart the welfare of their fellow citizens. My object is to work with all the means at my disposal, to expel from Quebec the Koch Bacillus, the defendant in this case.

Q.—What are your means of existence?

A.—I have no family means, but I attain my object, thanks to the generosity of the citizens of Quebec, who never refused to grant me the necessary aid.

Q.—What have you to say against Koch's Bacillus, the defendant in this case?

Action, Not Words.

A.—I have nothing to SAY against him, as I am not accustomed to speak in set phrases, but I have still lots TO DO against him and the like of him, if the citizens of Quebec wish to continue encouraging me. I wish, however, to protest before this tribunal, against the pretention of Koch's Bacillus that he can live as a King Master in this good old city of Quebec, a pretention which is based upon an erroneous conception of Quebec's hospitality; and I ask that judgment be rendered against Koch's Bacillus.

Honorable Judge Sanitas, exasperated by the audacity of Koch's Bacillus, immediately rendered the following judgment, without leaving the bench:

1.—It is ordered that Koch's Bacillus and all of his kind immediately leave the city, within the shortest delay.

2.—The witnesses in this case, that is to say, the citizens of Quebec, through the medium of the Anti-Tuberculosis League, are condemned to pay the costs of said removal.

3.—With this object in view, a group of young girls to the number of 250, chosen among the handsomest Quebec ladies, have been requested, under pain of a serious lack of patriotism and of charity, to call upon all the citizens of Quebec and secure the necessary amount to pay the costs of that moving.

4.—In future, will only be considered as people of any account, those who, on demand can produce their card as an active member of the Anti-Tuberculosis League, and thereby proving to the satisfaction of this tribunal that they have at least given their "mite" to contribute to pay the costs of said removal.

(The above clever case was worked up by Dr. Emile Nadeau, of the Quebec Immigration Hospital, and translated for the Public Health Journal by Dr. Wm. Delaney, of Quebec.—Ed.)

Editorial

Dr. Friedrick Franz Friedmann, perhaps the most discussed man in America to-day will visit Ottawa to attend the annual meeting of the Canadian Association for the Prevention of Tuberculosis, on March 12-13.

Hon. Adam Beck, who is president of the Association, received a telegram making the announcement.

The wire was from Dr. Porter of the Canadian Public Health Association, who was commissioned to go to New York by Hon. Mr. Beck to witness Dr Friedmann's clinics and to extend the invitation to go to Ottawa. The Duke of Connaught is honorary president of the Association.

The hope that Dr. Friedmann's treatment of tuberculosis is efficacious or curative lies in his expressed willingness to have it thoroughly tested by the officials of the Public Health and Marine Hospital Service at Washington. If the cultures of tubercle bacilli found in the turtle will really make innocuous or destroy the poisonous bacilli of human tuberculosis the medical officers of the Government will soon know it, and they will acclaim Dr. Friedmann the greatest physician since Jenner. If they find the treatment worthless, this finding, too, will be speedily and mercifully published.

Meanwhile patients and their friends will do wisely to continue without abatement the courses of treatment now administered by their doctors. Dr. Friedmann lacks for the cures which he has reported sufficient confirmation to warrant any abandonment of the medical procedure that has been approved by the long experience of skilled clinicians in combating the white plague. His statement that he withholds the publication of his methods of treatment because they would be bungled in the hands of doctors not specially trained is to be respected, but only with continuing assurance that he is affording facilities for testing its efficiency to men of high professional standing.

An essential feature of any legislation as to compensation for workmen's injuries is sound and available security that the payments required from employers will be fully and promptly made. Obviously this security should be provided at as low cost for the employers as may be without impairing its sufficiency. Each of these features is dictated not only by justice, but by the simplest common sense. If the security be not ample, the workman will suffer. If the cost to the employer be excessive, arbitrary, and vexatious, he will seek to evade it, and again the workman will suffer. Still another feature of importance is that it shall be made the plain interest of the employer to avoid the injuries for which he has to pay. The latter method, if properly guarded, is extremely rational and efficient. The principle has been tested for years in connection with fire insurance for factories, and has completely stood the test. It has the very great advantage that the members of the mutual insurance company are constantly impelled to reduce the cost of insurance by well-considered and practical measures for the prevention of "accidents." The experience of the manufacturers' mutual fire insurance companies, originated by the late Edward Atkinson, developed a system of protective and preventive devices that reduced losses in a remarkable degree. When the losses are of life and limb, of the vital assets of human beings, instead of losses of mere property, it is clear that the benefits of this feature of the system are incalculably more important. On this account, we should say that intelligent workingmen—especially the leaders of workingmen—should heartily support such legislation.

One of the most difficult problems of our cities is housing. It is of interest to the laborer because proper housing saves him the expense and trouble of much unnecessary disease. It is of interest to the health department, because much less work of curing would fall to its door if

proper housing were always possible. It is of interest to the employer because he would not be delayed by sick or half sick workers as frequently as he is now.

The best time for a city to plan its housing is when it is in the making. The next best time is now, whatever its age and condition. Housing involves the site of small homes; the window space of homes, the number of people living on a given area; the sanitary arrangements of buildings and the disposition of factories.

The "housing committee" is a feature of most good sized cities. It would be well if it were one of the first to be organized in a newly created city. If the tuberculosis sanitarium and the smoky factory were put far enough away from the school and the home site at the beginning, there wouldn't be so much trouble later to re-establish these institutions in different localities after the city has grown. The housing committee should always have the co-operation of every class of society in a city. Its purpose is to improve conditions of living for the benefit of all. We should have one clothed with authority in every town in Canada.

Every good cause has extremists who can see no value in any work but their own. The gospel of fresh air and outdoor living is no exception to this rule. One apostle of this cult comes out with the machine-made phrase:

"Half our diseases are in our minds and the other half in our houses."

It is smart, but it isn't true. Tuberculosis is a house disease and worry is a disease of the mind—except when caused by an inactive liver. But not all human ailments can be classified in this summary fashion. Typhoid and diphtheria are two scourges out of many which can not be laid to habits of building or habits of thinking.

Cheap epigrams like the one quoted hurt the cause they are intended to help. They express no truth, they point no remedy. Most people have minds, saving those whose heads are filled with fads, and in a climate like that of the temperate zone, most people must live in houses. Neither minds nor houses are injurious, if rightly built and rightly used.

A very influential deputation, representing various municipalities and towns, boards of education, etc., waited on the Ontario Government recently to urge the immediate formation of training schools for the feeble-minded in this Province. The deputation was received by the Acting Provincial Secretary, Mr. Lucas, assisted by Col. Hendrie, Hon. Adam Beck and the Hon. Dr. Pyne. J. O. McCarthy read an outline of what was wanted and put up a very strong case, which was well seconded by Commissioner Starr of the Juvenile Delinquents Court. They showed that there are between five and six thousand feeble-minded persons at large in the Province of Ontario; that the females are prolific breeders, and keep the Havens, Refuges, etc., well stocked most of the time; that a great many of the crimes committed in the Province are due to the males, and that if the money which the Province has to spend now in looking after these unfortunates was spent on detention homes the race generally would be much benefited.

Mr. Downey, the Superintendent of the Hospital for the Insane at Orillia, took emphatic exception to the establishment of separate institutions. He felt that things could be looked after better and more economically in the present institution, such as the one at Orillia, if the capacity was increased. He would have the "high-graders," help look after the "low-graders," and thus materially reduce expenses. Dr. Helen MacMurchy made a very clever and forcible speech, and urged immediate action.

The Hon. Dr. Pyne said the matter would receive every attention and that the Government would go as far as it could in the matter.

There is little doubt but that the establishment of training schools, apart from the present institutions would be more desirable, as many parents and guardians would willingly consent to their feeble-minded being in a training school while they might make strenuous objections to sending them as "high-graders" to a hospital for the insane. Besides, these latter institutions have now more than they can possibly handle. At any rate something should be done, and done at once, to check this pollution of our race.

Forecast and Review

DOMESTIC

Child Welfare.

The estimates of the Health Department show that Dr. Hastings proposes to carry on a vigorous campaign this year against the waste of child life in the city. He is correct in announcing that the rate of infant mortality could be cut in half by active measures. The majority of infants who die within one year of birth are victims of preventable causes.

Poverty, uncleanliness, ignorance on the part of mothers and unhealthful surroundings are the principal causes of a high death rate among children. A supply of pure milk would save the lives of many children in the poorer homes. Visiting nurses could overcome the ill-effects of ignorance on the part of mothers, for nearly all mothers are anxious to learn how to care for their children. The nurses could insist on cleanliness.

Infants will continue to die because of unhealthful surroundings until the housing problem is solved. But Council can give power to Dr. Hastings to mitigate other evils which result in a ruthless sacrifice of the lives of babies. Council, however, has to face a difficulty financial problem. Stringency caused by international conditions has been aggravated so far as Toronto is concerned by ill-advised action last year.

The growth of the city calls for larger expenditures. The management of civic business is extravagant. There will be a tendency to limit expenditure by restricting the scope of civic enterprise. For it is deemed inadvisable to interfere or even question departmental management.

In order to make the estimates fit the present tax rate, heads of departments will be made to curb their activities. If there is one field of labor which should be left free from restraint it is that which seeks to reduce the rate of infant mortality. It is false economy to let these children die for want of attention. If Dr. Hastings wants $15,000 or $20,000 for child welfare, Council should vote the money without demur. Apart altogether from the moral side of the question, sound economy requires this work to be financed. It costs the city $50 to bury each child who dies from preventable causes.

The Cost of Slums.

Even the most determined opponents of housing reform are abandoning the contention that there is no need for active measures in Toronto, says a writer in the "News." The abominable condition of large areas where people are herded together without opportunity to observe the primary laws of cleanliness and decency has been revealed. The rapid growth of these areas is too noticeable to be ignored.

Champions of the vested interests in slum property are now falling back on the plea that Toronto cannot afford to undertake a housing scheme at present. Economists would be nearer the truth were they to say that Toronto cannot afford to postpone action. There are two courses open to the city.

The first of these is to build healthful residences for the workers, and leave the slums to be cleaned up by the automatic expansion of industrial areas, aided by the power of the Health Department to condemn residences. This is the more economical plan. If Council were to erect good dwellings in the suburbs and model apartments in more central districts, and were to rent these at the lowest possible figure slum property would become depopulated, it would lose its fictitious value and factories would be erected where now there are blocks of fever-breeding dens. The other course is to clean up the slums and build on the same sites or elsewhere sanitary residences for the dishoused persons. This plan would be costly now. In a few years the expense will become prohibitive.

Is Toronto going to wait, as European cities did, until it becomes absolutely compulsory to clean up pestilential districts and rehouse the people? Are we prepar-

ed to go on paying for the illness and disease and crime springing from the slums while we wait for these slums to grow to an intolerable extent, knowing that ultimately the work of reform will have to be financed? Are the rights of slum property so sacred that the city must not compete in the housing business with those whose usury is paid in life and health and loss of character?

Are we to tolerate a class of human vampires who are draining the vitality from many working people? An appreciable proportion of the rising generation of workers is being brought up in surroundings which must have a detrimental effect on moral and mental stamina. If the city is too poor to remedy these evil conditions, it would be better to close the doors against the immigrants, than to admit 20,000 or 30,000 persons each year in order that their children and those of hundreds of Canadian workers may be condemned to squalor even greater than that which exists at present.

For Compulsory Sanitation.

W. K. McNaught, M.P.P. for North Toronto, and Mayor Hocken had a conference with Hon. W. J. Hanna Friday regarding the city bill, which this year has a number of important clauses.

The city is asking the right to demolish a large number of the old ramshackles which the medical health department has condemned in the "Ward" and other sections of the city, and to construct thereon houses for the working poor.

The opinion has been expressed that these houses will require to be of a very substantial character, and will perhaps prove expensive for their size.

The city also desires authority to order the removal of all cesspools, and power to enforce the instalment of sanitary closets. This will be a hardship on some of the poorer people, and in order to make the burden light, the city is asking that the work be done on the local improvement plan, and charged against the property.

A number of the matters were gone into, and the promise exacted from Mr. Hanna and other ministers that the city will be assisted in every possible way.

FOREIGN

A Great Demand for Trained Women as Social Workers.

Social work is the latest of the professions which offer a chance of self-support to women of intelligence and character, says a writer in the New York Times. It is only within a few years that this work has been put on a scientific basis. Within that period hundreds of college graduates and other educated women have been trained and are now earning from $40 to $100 a month; in some cases more.

The supply is not yet equal to the demand, a statement that cannot be made in connection with most wage-earning opportunities open to women. But this does not mean that any woman who needs "a job" and thinks she would rather like to be a philanthropist into the bargain can secure a position. Such applicants are being turned away every day by charity organizations.

The chance to become a trained social worker—the only kind in demand—is open to almost any woman likely to turn to that line of work. Schools of philanthropy have been established in a few cities and more are planned. The one in New York was the pioneer and is still the leader. Its graduates are sure of employment. In fact so great is the demand for competent social workers that even those students who have not taken the full course are reasonably certain of finding work.

Girls under 21 and women over 35 are admitted to the school only for exceptional reasons. The latter age limit is the more likely to be disregarded, for, of course, maturity of judgment and steadiness of purpose are recognized as qualifications which are so much clear gain, in a beginner.

While a college diploma is not required of candidates, it is expected that they

shall have made some serious preparation. They must be able to write an intelligent and grammatical exposition of a theme. They must know something of the history of civilization and of the physical resources and history of the United States. They must be more or less familiar with industrial history and conditions, and must know something of civics and economics.

These are all questions with which any intelligent woman can acquaint herself by reading conscientiously for a few months. She ought to be able after such preparation to take successfully the test examination required for entrance. Of course, character is a most important consideration. It is on this score that many applicants are dissuaded gently. Not on the ground that they are deficient morally, but because they show lack of poise, judgment and purpose. Merely to be sorry for the unfortunate does not qualify a person to analyze conditions and to contribute to their improvement, although many women appear to think so.

The full course of training occupies two academic years. A diploma is awarded only on the completion of the full course. If the student takes only one year's work she receives a certificate covering that period. The tuition fee is $150 for the full time for two years. Other incidental expenses come well within $50, so that for $200 at the outside—not counting living expenses—a woman can fit herself for a profession where she will at least be sure of earning a living.

To women of high ideals and philanthropic instincts it will probably be a source of great satsfaction to feel that in addition to achieving self-support, they are a factor in the great work of improving social condtiions. The demand is greatest for persons of resourcefulness and initative. For this reason a mature woman who takes the course is in greater demand than a younger one, even though the latter may be a college graduate and the former not.

"The student who enters the School of Philanthropy fresh from college usally finds it necessary," said the head of that institution, "to begin the actual work outside in a subordinate position, working for a year or two under direction while gaining experience."

Some idea of the nature of the openings offered to these social workers may be had from the statement of the New York school that former students are now found in the following positions:

Executive secretaries of charity organization, societies, children's aid societies, societies for the prevention of cruelty to children, societies for the prevention of tuberculosis, housing commisisons, bureaus dealing with the handicapped, the unskilled or the homeless, religious organizations, industrial and immigration departments of the Y.M.C.A. civic associations, societies for work among Italians, Jews, negroes and other special groups; head workers and assistants in social settlement and institutional churches; directors of boys' and girls' clubs, supervisors of playground and recreation centres; administrative officers in reformatories, orphanages and other institutions; staff investigators for Federal and State commissions and departments, consumers' leagues, child labor committees, bureaus of research, financial secretaries of hospitals and relief agencies; teachers in colleges and universities, nurses' training schools, theological seminaries and missionary institutes; parish visitors, factory inspectors, tenement house inspectors, probation officers, visiting nurses; visitors for State boards of charities, departments of public charities, and every kind of relief society and organization for the improvement of social conditions.

Health Bulletins.

Bulletins issued by many of the State Boards of Health are being used more and more for the education and enlightenment of the public rather than for the recording of long tables of statistics and formal reports. In no section is the increased activity of State health authorities more marked than in the South.

Aside from the regular bulletin of the Louisiana State Board of Health, the bulletins of the State Boards of Health of three Southern States which recently came in the same mail, are interesting evidence on this point. The November Bulletin of the Mississippi State Board of Health contains a copy of the proclama-

tion of Governor Brewer, designating November 20 as a health day, and urging the observance of the program of the State Board of Health on the part of all citizens. The State Board, co-operating with the State Department of Education and the Mississippi Federation of Women's Clubs, presents a program for use in all of the schools of the State, an outline for a course of study on public health by the women's clubs, and a comprehensive article on medical inspection of schools.

The November Bulletin of the Virginia State Board of Health contains an announcement of a lecture bureau established by the Board to furnish speakers on public health topics for any community in Virginia which desires to hold a public meeting. The announcement opens with the statement, "Settled in its conviction that the education of the people is the surest method of bettering the public health, the Board, since its reorganization has endeavored to place before the citizens of Virginia, in popular form, the tested truths of prevention." In this statement, says the Journal of the American Medical Association, lies the summary of the entire public health movement.

The December Bulletin of the North Carolina State Board of Health is devoted to the discussion of the liquor problem and public health, and the relation of alcohol to public health problems. An article on "The Attitude of the Medical Profession to the Use of Alcohol," a friendly talk to boys on the subject "Does it Pay to Drink Whisky?" and an article on "The Relation Between Liquor and the Death Rate" form the bulk of the pamphlet. These three pamphlets are simply selected at random from the constant stream of excellent material which is being placed in the hands of citizens by many of our State Boards of Health. This work cannot fail to enlighten and strongly influence public sentiment, which must ultimately crystalize in better legislation.

From Bulletin of the North Carolina Board of Health.

More people suffer from common colds than from any other single ailment. Yet no one ever dies directly from a cold, nor does he ever get gravely sick. Where colds get in their work, however, is in paving the way for other more serious diseases. The two most common diseases that start in with "just a cold" are pneumonia and tuberculosis. These two diseases alone kill over three times as many people as die from malaria, typhoid, smallpox, measles, scarlet fever, whooping cough and diphtheria combined, so we see that the aftermath of "just a cold" is no joke.

Colds are now generally thought to be due to some micro organisms which make them more or less contagious. It will frequently be noticed that when one member of a family or of an office or worshop contracts a cold, all, or nearly all, of the others get colds, too. Indeed, many employers insist that when an employe appears sneezing, sniveling, or speaking thickly, he had best be sent home at once, until he has recovered. Some even predict that a time will come when colds will be quarantined. However that may be, the practical point to bear in mind is that to avoid colds, one of the best things we can do is to avoid the people who have colds.

Some people "take cold" more easily than others, so to fortify one's self against colds is of prime importance. It is simply the same old story of keeping one's physical condition up to the top pitch. To do this, lead the simple life. Have eight hours' sleep in fresh air, a daily bath, some outdoor exercise, and a simple diet on your daily program. The absence of constipation is also of great importance. Such a course should build up one's physical resistance against colds so that it will take hot, crowded, stuffy churches, offices and living rooms to induce a cold.

When you want to contract a cold or any other contagious or infectious disease, one of the best ways of doing it is to go right into a close, crowded, superheated room, where there are one or more victims already coughing, snorting, sneezing and spitting. If you can't get it there you are nearly immune. If you don't care to take such chances of catching diseases, see to it that you keep lots of fresh air between yourself and the person with the disease. Cases of infectious disease may be approched with impunity if one is careful to approach on the windward side. The same principle holds generally. To reduce the

possibilities of contracting disease the infected air in the danger zone surrounding the sick person should be constantly diluted with fresh air. The more diluted the infection, the less danger there is of others contracting the disease.

Ventilation of the Home.

A Health Bulletin, as issued by A. J. Douglas, M.H.O., Winnipeg.

The principles governing and underlying ventilation, and its vital importance, not only to health but to life itself, not being sufficiently recognized by the majority of individuals, this article is written with the hope of claiming the attention of those who hitherto have treated the question of ventilation of the home with indifference.

The air we breathe in its pure state is composed of oxygen, nitrogen, argon and vapor of water, with traces of other substances. It is, however, never found in a perfectly pure condition, except on the ocean and the mountain top.

Air is more essential to the sustenance of life than either food or drink; without the latter life could be maintained for several days, but would cease in a very few minutes without air. It is, therefore, of the utmost importance that the air about us should be rendered as pure as environment and circumstances will permit. Air in the home is contaminated in a variety of ways, such as dust held in suspension, there being frequently many thousands of such dust particles to the cubic inch in a badly ventilated room; a ray of light beaming through a crack or hole in a darkened room will reveal their presence to the naked eye.

Furniture, curtains, carpets, and utensils take up air space and give off various impurities. Air pollution is also occasioned by defective plumbing, foul sinks, water-closets, baths and other fittings. Offensive odors are frequently given off in the process of cooking. A defective furnace, stove, range or stovepipe will aid in the general pollution of the air. The burning of gas in stoves or jets, lamps and candles absorb the oxygen from the air and increase the impurities in the process of combustion, while we ourselves pollute the air in precisely the same manner by impurities cast off from our bodies.

Seeing then the importance of pure air in the home, and the many sources of aerial pollution, it is absolutely necessary, if healthy conditions are to be maintained, that the air in the home be changed as frequently as possible; this changing of air is called ventilation. Many of the dust particles settle and are removed by cleaning. The other impurities, such as the products of combustion, respiration and excretion, the odors from cooking, defective or filthy drains and plumbing fixtures and other sources of aerial contamination, which are mostly gaseous, can only be removed by ventilation.

Ventilation, whether natural or mechanical, is dependent of two conditions, (a) variation of temperatures, (b) variation of air pressure. It is known that the atmosphere exerts a pressure of 14.7 lbs. per square inch at sea level, and becomes lighter or more rarified at higher levels, decreasing with increase of altitude.

The atmosphere of air, by the pressure exerted in the lower strata is pressed into every cavity and opening into the dwelling, particularly at the lower parts where the pressure is most excessive.

Air when heated, has a tendency to rise, as will be noticed by any observant person that the air of a room is always warmest near the ceiling. This law being known, its principle should always be adopted in ventilating premises of any description.

The vitiated air should be permitted to escape at a point near the ceiling of a room or the highest part of a building, and the fresh air admitted at a lower level and so directed into the room as toavoid a draught, if possible.

Owing probably to the severe winters experienced in this country, very little attention is paid to ventilation of the home. Very few ventilators or means for ventilation are found in the ordinary dwelling house, except by doors and windows.

One of the most effective methods of ventilating a room is by means of an open fire grate. The fire burning in the grate induces a rush of air up the heated chimney, and so extracts air from the room, which is replaced by fresh air.

Where the open fireplace is not available, other means of ventilation must be

resorted to. Windows should always be made to open from the top as well as the bottom, and where they are relied upon for ventilation, should be so placed as to be as efficient as possible.

They should reach as near to the ceiling as desirable, so that when opened the air at the top of the room may be changed. Storm sashes in winter should be made to hang from the top, and sub-sashes or slides fitted at thetop and bottom of the same.

A very simple device for admitting air into the room by the window without causing a direct draught is to lower the top sash a few inches and to insert a perforated board. The air is admitted through the space between the two sashes, having at the same time an upward tendency; the vitiated air is allowed to escape through the perforations in the board at the top of the window.

Heated flues may also be utilized as foul air outlets by fitting mica valves in same. The mica valve closes when a down or back draught occurs, but if this valve is fitted quite near the ceiling a down draught is seldom occasioned.

In addition to all rooms being properly ventilated, ample means should be provided for the escape of foul air from the hall and stairway; the hall and stairway may be regarded as a large ventilating shaft, for every time the front or back doors are opened a rush of fresh air into the hall is occasioned; this drives the hot and vitiated air to the top of the building. When it is possible a well-constructed skylight with louvred sides might be fitted directly over the stairway, which will not only provide an avenue for light, but will also permit the escape of foul air, and prove an effective aid to ventilation.

The impurity of the air is sometimes based upon the amount of carbon-dioxide found therein. This can be known accurately by the chemist. The purest air obtainable in a city would contain about 2 to 3 parts in 10.000. In a well-ventilated room the proportion would be 3 to 4 in 10.000. The average householder is not able to ascertain the exact amount of carbon-dioxide present, but when an unpleasant odor or stuffiness is in evidence, doors and windows should be opened so as to change the air as rapidly as possible.

In addition to providing the means for constant ventilation as briefly outlined above, it is well to throw open the doors and windows occasionally during the day, and when climatic conditions are at all favorable, they should be left open.

The windows of bedrooms should be left open during the night, providing screens or some other means for preventing a direct draught to fall on the sleeper.

Chelsea, Mass., Regulates Offensive Trades

Rule 58a. No person or persons shall exercise any of the following trades or employments, viz., that of manufacturing fertilizers, of mixing or storing refuse animal or vegetable substances, or sorting or picking feathers, of refining oils, of making egg dressing, varnish, glue, gas, water-gas, gasoline or any burning fluid, within the city, except at places where such trades or employments are now lawfully established, or where such trades may hereafter be assigned by the board of health; no person or persons shall exercise any of the following trades or employments, viz., that of slaughtering animals or fowl, of rendering animal matter, of smoking fish or meat, except at places where such trades or employments are now lawfully established and licensed or where such trades or employments may hereafter be assigned and licensed by the board of health, all such licenses expiring June 1, annually; above said trades or employments being either a nuisance, or hurtful to the inhabitants of this city, dangerous to the public health, attended by noisome and injurious odors, or otherwise injurious to health of said inhabitants.

No Reopening of Vice Markets.

It is evident that persistent efforts are likely to be made to obtain municipal protection and toleration of vice in Chicago. The unasked appearance of three women procurers before the city council vice commission as pleaders for a policy of segregation showed to what extent the effrontery of those who desire to profit out of this policy may go.

In the light of all that is known of the evil effects of segregated districts, it is impossible to believe that the city authorities, who are desirous of guarding public health and morals, can be misled into fav-

oring segregation. A step forward has been taken in the breaking up of the former "red light" districts; to allow their re-establishment would be to announce to the world that our desire for decency is only spasmodic. Segregation in any form cannot now be tolerated.

Save Girls by Good Homes.

"Wanted, one hundred married women, willing to take into their homes nice clean young girls as maids, and to take an active interest in the girls' welfare. Apply at office of District Attorney, Edward J. Yockey."

A campaign to save girls from the evils and vices of a big city is the object of Mr. Yockey's advertisement, and not the least part of his plan is the solution of the domestic service problem of the Milwaukee housewife.

The District Attorney's interest is in the protection of girls of tender age whose environment is of the worst and whose young lives are endangered. His idea is to provide homes for girls who, without other help, would necessarily work in factories or places where their youth and unsophisticated nature would render them easy prey to waiting snares and pitfalls.

New Disease Carrier.

After a number of examinations, the City Health Department, Kentucky, has condemned the common fork in use at the saloon free lunch stands throughout the city, and contemplates asking the general council to pass an ordinance prohibiting its use.

"False and Fraudulent."

Chief Carl L. Alsberg, successor to Dr. Wiley in the Bureau of Chemistry at Washington, said rightly, in his speech recently in New York to the manufacturers of medicinal products, that while the people have been trying to get pure foods they have failed to get pure medicines. The fault, he observes, is in part with "unforeseen loopholes in the law." They were not unforeseen by those who fashioned the loopholes. Dr. Alsberg hopes that the Shirley Act approved on August 23rd last, will enable us to compel the removal of all false and fraudulent matter" from packages of patent medicines. Hereafter a compound of arsenic and strychnine may not "falsely and fraudulently" be misbranded to read:

"A brain, blood and nerve food; especially prepared for the treatment of dyspepsia, neuralgia, kidney and liver trouble, catarrh, consumption, locomotor ataxia, wasting diseases, nervous diseases, nervous debility, and all kindred diseases resulting from worn-out nervous system."

That is patently false. But is it, technically, both false and fraudulent? A violation of the Shirley Act can be proved only when it is demonstrated that the publisher of false labels intended to swindle his gullible patrons. The defendant might easily plead ignorance of their falsity in the case of the stuff labeled as above, and get off scot free. The Shirley Act should have simply made it criminal to publish false labels; that would have barred thousands of unqualified manufacturers now dealing in nostrums to be administered in cases of life and death.

But there is another loophole in the Federal Food and Drugs Act wherein this rule of law applies:

A drug bearing a name in the United States Pharmacopoeia and National Formulary and branded to show a different standard of strength quality or purity, shall not be regarded as adulterated if it conforms to its declared standard.

Let it declare "a different standard of strength, quality, or purity," and a degraded medicinal agent may be foisted upon the public. Moreover, the statute makes no provision for the strength or purity of drugs sold by names differing very slightly from the names listed in the Pharmacopoeia and Formulary. Where these official books fail to provide a test, and that is the case for the majority of drugs prescribed by physicians, no standard may be professed or adhered to. Commenting upon this amazing defect. The American Druggist's "Handy Guide No. 7," circulated among manufacturing chemists, says:

It would seem to follow that if a drug is not sold under or by a name recognized in the United States Pharmacopoeia or National Formulary, and is not sold according to any professed standard or quality, it shall not be deemed to be adulterated, no matter what its quality may be. Here

seems to be a loophole large enough to permit the passage, not only of the traditional "coach and six," but of a whole procession of such vehicles, laden with spurious and adulterated products.

Secretary Wilson approved in February 1910, an amendment which would stop up this "coach and six" loophole, submitted by the Bureau of Chemistry, as follows:

Section 7. That for the purposes of this act an article shall be deemed to be adulterated:

In case of drugs:

First—If, when a drug is recognized by the United States Pharmacopoeia or National Formulary, and is sold under or by any name, it differs from the standard of strength, quality, or purity as prescribed by the United States Pharmacopoeia or National Formulary official at the time of investigation.

Second—If it fall below the professed standard of strength, quality, or purity under which it is sold, or if it fall below the standard prescribed by the Secretary of Agriculture.

Third—If it contain any methyl or wood alcohol.

If the "coach-and-six" loophole was unforeseen, as Chief Alsberg intimates, why has it never been stopped up? The reason simply is that there are 3,000,000 persons constantly ill in the United States, and a gang of despicable criminals have their lobby at the doors of Congress to see that the loophole is kept open. They are driving through it unmolested in their conscienceless raids upon the purses of their victims. Will not Dr. Alsberg lift up his voice in denunciation of these scoundrels?

Health of Children Dr. Wiley's Care.

The call for a national campaign in behalf of the health of the school children was sounded by Dr. Harvey W. Wiley before the general session of the National Education Association in the Auditorium Theatre, Chicago.

The former head of the government pure food bureau launched into an arrangement of patent medicines, nostrums and stimulants. In addition he charged that the health of children is menaced by the so-called "soft drinks" dispensed at drug stores and soda fountains. The expert's attack an all kinds of "dope" was interrupted by rounds of applause.

"I call upon you teachers as the most able body in the country to teach abstinence from dope of all kinds," said Dr. Wiley. "The schoolroom is the hope of the country. Join in a campaign against the American habit of 'taking something' for everything. No medicine ever cured any disease. Don't let the children eat or drink stimulants.

"To-day under the noses of parents who would not permit their children to drink coffee or tea the young are obtaining more harmful stimulants at the drug stroes and soda fountains.

"No one seems to be fighting this inhuman and despicable traffic. There are more than a hundred 'soft drinks' as harmful as coffee and tea. They are more harmful in that they are taken between meals on empty stomachs when they do the most damage.

Another crime is the fact that so many of our newspapers advertise these harmful nostrums. The religious and agricultural press is especially filled with this sort of advertising. I long to see the day when the newspapers are free from lauding these so-called remedies which menace the life of our people. Their power would be incalculable in breaking the habit of drugging themselves which our people have.

"I would like to see cities start campaigns to give to half nourished school children the nourishment their poor parents cannot give. Go to your city government and ask this. You give money for garbage removal, but does the city do anything to furnish pure milk to needy infants? Finally, let the children have plenty of air—night air, too—and less of stimulants. Hygiene, good air, and good food, and less patent medicines is what this nation needs most."

Dr. Wiley fills the fifth number of the university lecture course Friday evening of this week. He will lecture on the subject, "The Public Health Our Greatest National Asset." His appearance in Missoula on the platform should call out a large audience as it is an event of great importance in the light of Dr. Wiley's public work.

Cleanliness of Teeth Imperative.

Before the Nineteenth Century Club says the St. Joseph, Mich., Press, Dr. S. W. Honey gave a talk on oral hygiene. The day was devoted to a health pro gram and in response to roll call health thoughts were given.

Dr. Honey spoke most instructively and enthusiastically on the subject of the care of the teeth. The mouth and teeth are the gateways to the body and if one would be free from disease he must look first to the teeth and mouth that germs may not develop to be taken later into the system. Pneumonia and tuberculosis are frequently caused by defective and unclean teeth. Modern physicians are teaching the prevention rather than the cure of disease and so widespread has become the importance of the care of the mouth and teeth that in a number of cities children's teeth are regularly examined and cared for without charge. Dr. Honey spoke of the care to be given children's teeth that the permanent teeth may come in under healthy conditions. He also told of the school of dental clinics which is conducted in Germany and which has had much to do with improving dental hygiene. The effect on the mental, moral and physical condition is largely due to the condition of the teeth.

Physical Examination Before Marriage.

The Maricopa County Medical Society, Arizona, at its January meeting, adopted resolutions recommending that persons applying for marriage licenses be examined by a board of competent physicians not engaged at the time in regular practice. The society endorses the proposal to secure legislation aimed to prohibit marriages of those of unsound mind, of those afflicted with any venereal diseases, of persons suffering from tuberculosis in advanced stages and of chronic alcoholics.

Marry Only Those Physically Sound.

Dean Sumner of Chicago, before social service workers of nearly the whole city and of many denominations, spoke in Trinity Church in that city recently about the stand taken by the clergy of Chicago Cathedral against marrying people until they produced medical certificates. The Dean said:

"We guard our business with great care. To carry on any business whatever we must have a license. To get such we must, in Chicago, have the backing of some reputable property owner. I take it the same requirement obtains in New York. Chicago requires all this, even if a man wants merely to sell shoe strings in the street. But if the same or any other man wants to get married he goes to the County Clerk's office, wholly unknown and unvouched for as to character, responsibility, or anything else. With him goes an unknown female. She is also unvouched for. No matter what their mental, physical, moral conditions, they get the license, and if they can pay the fee, or get somebody to trust them, they are married. The next generation? It looks out for itself.

"Is it any wonder we are building each year more and more insane asylums, penproportion to the increase in population? itentiaries, hospitals, and these out of Is it in the face of these facts that last Easter the Cathedral at Chicago took a stand that it would no longer be a party to a marriage of people who were not physically and mentally sound, and to demand a certificate from a reputable physician.

"We acknowledge the fact that all clergy may not be able at present to take such a firm stand, but, until the public is aroused and educated to the needs, they can encourage all movements looking either to legislation or a decision on the part of parents to demand some assurance of safety. The stand taken by the Chicago Cathedral is extending all over the country, to prevent the awful suffering and wreckage of life which come from the marriage of the unfit."

Speaking of rich men, the Dean pointed out that concentration of wealth is concentration of responsibility. "There is but one way in which a rich man can justify his existence in a community," said the speaker. "It is by using his wealth only as a trust for the welfare of humanity and the glory of God. Gambling transactions of every kind exhibit the lamentable aspect of men attempting to secure something for nothing. Let us

not forget we have no right to take from life without adding to life. To live without service is dishonorable.

"When we realize that there are 200,000 people in hospitals all of the time, and that there are 3,000,000 abnormal people in our public institutions, costing the State $200,000,000 a year to care for them, and that all of this wreckage of life is increasing far beyond the percentage of increase of our population, great as that is, shall we not take steps along the lines of remedial legislation as well as palliative? It is beside the mark to point out the poverty growing out of industrial accidents. Why talk about sanitation? All these we are striving to change, and it is well we are. We give thought, time, and money in these ways to change the environment under which men live. What are we doing to protect the integrity of the race, the home and the nation by giving to children the right to be well born?"

State Health Department Cuts Death Rate

In the early part of this month, Dr. Samuel G. Dixon, State Health Commissioner, made the statement that Pennsylvania, one of the most disease-ridden states in the union, because of its poor water, has in the past year reduced deaths from typhoid 62 per cent., from 4,000 to 1,200; and has reduced diphtheria deaths from 42 per cent. to 8 per cent., which insurance men have estimated saved them $10,000,000. Men are placed on all the water sheds of the state, removing pollution and all water companies are required to install filters before they can secure a permit to operate from the state board. All municipalities are compelled to keep their sewage clean and to obtain permits for all extensions. In discussing the care of tuberculous patients, Dr. Dixon spoke of Mount Alto Sanatorium on South Mountain, where there are 55,000 acres of land and where 1,067 patients are living in pure pine forests. The aim of the department is to cure all consumptives, who can be cured, and to segregate incurables.

A Help to New Views.

The Bureau of Social Hygiene deserves a hearty welcome. A permanent organization set up for scientific and humane study of the social evil, is something new under the sun. The most modern principles and methods of research are to be applied to an eternally old subject, and that cannot easily occur without having far-reaching effects.

It should help toward a readjustment of views; a practice, sometimes painful, that every one who has lived a considerable length of time knows to be necessary, unless he is to become a "back number" at middle life, and live out the rest of his days sighing for the good old days and protesting against innovations. He knows that for the average man this process of adjustment is slow and difficult; that, in fact, to bring men to face the facts of life from a new angle and with a different expectation from that previously entertained, is a laborious work.

The data compiled by this undertaking will supplant, in time, the offhand opinions and conjectures upon which, up to the present time, most views of this blot on social life have been based. A long step is taken toward the solution of a problem when it is thoroughly understood.

Heretofore, glib, and mostly pessimistic, tongues have been ready enough to say: "We've always had this institution; for its continuance it depends upon the perversion of a common instinct; therefore, we can never expect to get rid of it. It must be winked at, or licensed, but cannot be eliminated because there will always be people to patronize it."

Probably that has been the view of a very large majority of the people. But if that view had prevailed with young Mr. Rockefeller and his associates, the Bureau of Social Hygiene would never have been set up. It is not the Rockefeller way to chase will-o'-the-wisps out into the unending dark. The bureau has been organized after long preliminary investigations, which have evidently convinced the organizers that the work of the bureau will not be useless.

A laboratory for the study of the physical, mental, social and moral aspects of this evil has already been established. Here is a novelty. Past generations have not only not studied the evil scientifically and from these many standpoints, but they have used all the forces of their high

civilization to cover up the evil and banish it from discussion. A readjustment of traditional attitudes toward it is apparent immediately; and this is only the beginning. Along just this one line there is a great work for the Bureau of Social Hygiene.

While there is no justification for the world's long tolerance of this evil, with its entailment of the most loathsome and damaging diseases to which human nature is susceptible, and apathy toward the charge the unrestrained indulgence of human passions lay upon society, perhaps the institution would have been met with less indulgence if its commercial depravity had been fully recognized.

The Chicago and San Francisco vice commissions have opened up a mine of facts, showing that the social evil is a commercial enterprise of monstrous proportions and profits in which the women who are degraded by the business are not the beneficiaries. Taking advantage of the apathy of the public, a comparatively few degenerates have exploited the women at a profit running into astounding figures. The easy tolerance of the public has really been a connivance at this depraved commercialism, which has taken a heavier toll of human degradation than any other of the world's evils, unless it is human slavery itself.

As the result of the activities of the Bureau of Social Hygiene, we shall all probably learn more definitely what the price is that we pay for shrinking from the fight against this institution. There is no doubt that these figures, whether they describe mental, physical, social or moral loss, will be far in excess of those suggested by the imagination. They will be definite, based upon research and undeniable. It will not be possible to blink them.

They will show, too, the inter-relations of this and other evils that clamor for a cure more loudly than tuberculosis, or cancer, or poverty, or industrial oppression. That will be a great gain; for, if we are faced by the fact that the hope and despair, alike, of all our evils are their entanglement, it will be seen that no one can be privileged while the rest are subjected to regulation.

A New Plan for Industrial Schools.

An entirely new plan of industrial training for children more than fourteen years old is outlined in the report of Dr. Herman Schneider, Dean of the College of Engineering of the University of Cincinnati. The Board of Estimate's Committee on School Inquiry employed Dr. Schneider as one of eleven educational authorities to investigate the public school system of New York, under the supervision of Professor Paul H. Hanus of Harvard University. Dr. Schneider was chosen to report on vocational or industrial schools.

Dr. Schneider says that the schools fail to duplicate the work of the shops, but that the two may be made to co-operate to their mutual advantage. He favors the establishment of a compulsory continuation school law making it incumbent on employers of children of school age to send the children to school for not less than four hours a week in the daytime whenever the public school system establishes such schools. He outlines plans for the establishment of such school courses by co-operation of shop employers and the constituted school authorities.

Dr. Schneider's co-operative scheme is based on "an agreement between a group of manufacturers and a school system, whereby the manufacturers agree to institute and carry on a thorough and comprehensive apprentice course in their particular trades, and in which the school agrees to give both general and specialized instruction to the apprentices. The course of work which the student receives in the shop is scheduled by the shop, and must be approved by the school authorities. The school course is devised by the school authorities, in most cases, the amount of school instruction is equal to the amount of shop work. The apprentices are usually divided into two sections which alternate with each other, for example, by weeks, so that when one section is at the shop, the other is at school, and both shops and school, therefore, are always full-manned. The apprentices are paid for their work in the shop on the regular apprenticeship scale of their particular trade.

"In order that the work of the school may be definitely co-ordinated with the work of the shop," Dr. Schneider says, "a separate set of teachers is sometimes em

ployed. These may be called coordinators. The shop coordinator is a teacher well versed in shop practice. He spends every morning at the school and every afternoon in the shops. His function is to make a direct coordination of the work of the shop with the instruction of the school."

Various co-operative plans such as those employed at Fitchburg, Mass., Solvay, N. Y., and Lewis Institute, Chicago, are cited in the report as having demonstrated by actual experiment that the co-operative scheme is commercially profitable to the manufacturer and to the student, and economical for the school.

"Under the continuation system," says Dr. Schneider, "the employer releases his employes of school age for a period of time e.g., one-half day or a whole day, per week to attend the public schools for definite mental instruction. The instruction given at the school is entirely under the control of the school authorities; but the school authorities have no control whatever over the shop work. This type of school is in extensive operation in Germany, and a few have been started in this country. It has been shown in America by actual experiment (in Cincinnati) that a worker in the energizing trades who goes to school for one half day per week on pay, is a better producer per week than if he does not go."

Dr. Schneider suggests that the continuation courses could be started in public schools either by compelling the employer to send his workers between certain ages to the schools for a certain percentage of the working hours, or by inducing the manufacturer by voluntary action to consent to co-operation with the public schools. The first method, he says, in so far as it involves an agreement on the part of the employer to maintain a thorough apprentice system, can hardly be made compulsory by legal enactment, unless laws governing apprenticeship are also enacted. Under the second system, he says, even greater difficulty would be experienced, since the manufacturer must be convinced that four or eight hours a week in the school room will so increase the efficiency of the young worker that the production will not decrease.

"It has been conclusively demonstrated that the school and the shop can work together if the one commond ground will be the mutually safe ground of the mental, physical, and moral advancement of those who work," he says. "There is but one satisfactory answer to this, namely that the thing is being done and is being done satisfactorily."

Dr. Schneider blames the authorities for not being alive to the needs and necessities of the great mass of working people. Heretofore, he says, educational efforts in industrial education have been directed almost exclusively to the more energizing trades, such as plumbing, woodworking, blacksmithing, and machine shop work, instead of the automatic or enervating trades.

"A public school system, however," says the report, "must have a comprehensive community efficiency as its objective and from this viewpoint the machine-feeding occupations present the more serious problem. Hence they must have at least the same amount of attention as the energizing work. If all the elements which make a citizen a good civic unit for a self-governing community are considered as the special business of the schools, then the problem of the mentally and physically enervated worker is its major task."

Dr. Schneider indorses the City Superintendent's recommendation to abolish the compulsory evening schools for juvenile workers, between the years of 14 and 16, if they have not completed the elementary day school course. "After 8 or 10 hours of daily grind," he declares, "the young worker should not be forced by law to forego the recreation which nature insists he should have, and to sit for several hours more at night for purely academic instruction."

The most commendable kinds of work at present being done by the night schools, in Dr. Schneider's opinion, is in teaching English to foreigners, teaching industrial science to those in energizing occupations —as opposed to purely automatic machine work; and in giving instruction in dressmaking, millinery, and household science. Dr. Schneider found trade schools inefficient in attempting at present to supply specific training for given occupation, instead of producing skilled workers. He favors the establishment of prevocational, or industrial all-day schools, embracing a range as wide as possible of different types of occupations, for children over fourteen

years of age, who are not permitted by law to enter certain skilled trades until the age of sixteen. These schools, he says, should be modeled on the Parental School of Long Island.

Quackery in England.

The answer to that question (protection to human beings) reveals a state of affairs that constitutes a blot on our national intelligence. Any ignorant person, such as a farm laborer, a blacksmith, or a hairdresser, may claim to cure any disease under the sun, and may, without fear of punishment, do to death any one foolish enough to trust his nonsensical claims. As a matter of fact, many quacks make large or even princely incomes, whereas the average medical practitioner lives and dies a poor man. Think of the irony of that situation! Imagine a young man in search of a career asking advice of a candid senior as to the prospects of medical practice. "My dear sir," might well be the reply, "if you want a simple competency you will, sooner or later, acquire that as a general practitioner, or, after some longer years of waiting, you may secure a much larger income as a specialist or consultant. Truth compels me to add, however, that as a bone-setter, or as the universal provider of cures by physical exercises, or as the proprietor of a nostrum, you may within a few years attain a huge fortune. Needless to say, neither of these unlicensed methods demands a particle of study, whereas at least five years of hard work and the expenditure of a large sum of money are needed to secure a medical qualification."—Med. Press and Circular.

Inquiry Into Child Welfare.

The Social Welfare Association for London (with which the Association of Subscribers to Charities is incorporated) is undertaking an inquiry in regard to the work of the multifarious agencies in the metropolitan area dealing with children.

The object of the inquiry is to collect reliable information concerning all institutional and other agencies helping London children, with a view to ascertaining (1) how far the needs of children are met (2) the extent to which there is lack of co-operation and co-ordination between these agencies and authorities and how this may best be remedied.

In connection with this inquiry the committee are considering the desirability of a bureau or centre being established in London to afford to subscribers and supporters of children's charities, and those interested in the care of the child, information of every description upon all questions affecting the welfare of children. This proposal is receiving careful attention. The ground may be already covered in certain directions, but it is felt that any system which is to be of service to the general public must embrace every branch of work affecting children and must have the approval, as far as possible, of all societies dealing with children. The committee believe that everyone interested in child-welfare, especially subscribers to children's charities, will welcome this suggestion as likely to meet a long-felt want. The committee is supported in this view by information which reaches them from other parts of the country and the United States of America as to what has already been done in this direction.

Sir Melvill Beachcroft is chairman of the Council of the Social Welfare Association, for London, and the Earl of Lichfield is chairman of the committee of inquiry into child welfare. All communications should be addressed to Mr. A. H Paterson, secretary of the Association, at 845, Salisbury House, Finsbury Circus, E.C.

Tropical Residence and Copious Water Drinking.

The late Dr. Paul C. Freer, in a study of the effects of tropical sunlight (Philippine Journal of Science), arrived at two interesting conclusions concerning residence in the tropics and the use of water by soldiers on the march. He believed that in a climate like that of the Philippines, with the sea modifying the extremes of temperature, and with a large proportion of cloudy weather, the white man, by taking proper precautions, should not find it deleterious, and need only seek the shade to avoid danger from even the greatest insolation. Soldiers on the march or other persons compelled to spend much time in the sunlight should wear white

underclothing and helmets and should be supplied with an abundance of safe water, the two canteens allowed the soldiers not being sufficient, in Freer's opinion, to maintain a proper equilibrium of body fluids, allowing sufficient perspiration to carry away the excess of body heat. Likewise copious water drinking in any country in hot weather, with free perspiration, tends to reduce discomfort from excessive heat. The vice of iced drinks is that they are too cold to be taken into the stomach in large enough quantities for free and cooling perspiration, and their coldness defeats the very purpose for which they are taken—to cool the body.

The Role of Prevention.

In the future of medicine, the mere removal of disease must play more and more a subordinate part. Most disease can be prevented. Above all therapeutics stands sanitation. It is possible to remove causes of disease long before any disease begins. It is possible to heal our patients long before they are sick. Our knowledge in many fields is now adequate for this result. No one can be attacked by an infectious disease unless we have somehow or other permitted the infection.—David Starr Jordan, Science.

Patent Medicines and Public Health.

While much that is now sold in the drug stores represents merely a harmless or sometimes useful physician's prescription, the aggregate result of the "patent medicine" is the building up of gigantic systems of robbery on the one hand and a corresponding damage to public health on the other.—David Starr Jordan, Science.

Psychology of the Sick-Room.

A young woman, writing to the New York Sun, says that she has made a great discovery. It is that sick folk do not desire to be "heartened up," but wish sympathy and commiseration. Instead of saying, "You're looking splendid and you'll soon be in the very pink of good health," she advises those who visit the ailing to talk of their ailments sympathetically if they would make a hit with the sufferers.

It isn't exactly new, this New York girl's discovery. Any physician whose practice is largely among women knows that this is the right way to treat his patients. Women who are sick—and men too, very often—take a strong personal pride in their ailments. There is a mournful pleasure, apparently, to a sufferer to talk of the severity of the afflicting illness or the rarity of the surgical operation which has been or is about to be performed.

The best women's physicians use an acute working knowledge of psychology to aid in effecting cures. They never doubt the word of a patient that she is "awfully sick." They agree; tell all about the severity of the ailment; admit the terrible suffering the patient is undergoing, but wind up by prescribing something that will infallibly cure within a short time.

The patient believes the sympathetic part of the physician's talk and, naturally enough, also believes the encouraging portion also. The result is that the cure is usually effected as predicted, whereas if the physician had pooh-poohed the sickness and said the patient would be all right in a day or two he would not only not have been believed but in very obstinacy a mental condition might have resulted which would have the effect of prolonging the malady, if not in fact, at least in the patient's mind, which is just as bad. The successful physician of to-day, therefore, is one who is an expert practical psychologist as well.

Typhoid Vaccination.

A disposition to make the method of vaccination against typhoid an excuse for maintaining insanitary conditions is not one that should be encouraged. This seems, however, to be the tendency of a recent newspaper editorial on typhoid immunization, in which it is declared that the method will "be a boon in towns where water purification plans cannot be built because of the expense." It can hardly be believed that this point of view will find many supporters. It is too much like blowing out the gas because there is a good chance of recovery if the pulmotor is brought in time. Taking trouble and especially spending money for a good water supply may seem to some minds more difficult than having some one inject

a dose of dead bacilli, thus permitting the intelligent but impecunious citizen to drink sewage laden water with impunity. We can hardly believe, however, says the Journal of the American Medical Association that this method of reasoning will become general.

Beneath Old Roman Baths.

Surprising discoveries have been made in the effort to excavate the vast baths of Caracalla, at Rome, that have lain hidden under 200,000 cubic meters of earth. In this latest excavation it has been found that underneath the baths proper was a subterranean city, consisting of over 4,000 yards of vast galleries used by the slaves and attendants and for marvelous hydraulic, heating and ventilating systems. The drainage is described as splendid, and but for the rise in the level of the river Tiber, which makes it impossible sufficiently to slope the pipes, these same drains could still be used.

Converting House Refuse into Manure: A Dust Manipulator.

We had occasion the other day, says the Sanitary Record to inspect the plant which was erected a few years ago by the Southwark Borough Council for the treatment of the house refuse of that borough, the system adopted being the turning of the refuse into a marketable manure, and we were greatly impressed with the results. This plant consists of four independent units, each unit comprising a patent disintegrator, a conveyor, and an electric motor for driving. The four sets of machinery are erected in pairs, the two pairs facing each other, the conveyors converging towards the centre and discharging the output into a railway truck which when full is moved on to a siding ready for despatch. We were astonished at the small amount of noise made by the machinery and the little space occupied by the plant, the whole of which is contained in a shed some 50 feet or 60 feet by 20 feet. The machine that does the work is called a patent lightning dust manipulator, and it certainly deals with the very mixed assortment which is found in house refuse in the most efficient manner. It is a very strong and powerful centrifugal force disintegrator, which is built to stand the maximum of wear and tear. The dust carts tip their loads on a sheltered platform some 20 feet by 12 feet, where large tins and leather, which fetch a good price, are thrown aside by the workmen, while the remainder, including broken glass, crockery, slates, wood, and small tins, in one word, the whole of the unpicked refuse, is shovelled into the hoppers of the machines for treatment. In a second or two after entering the machine the house refuse finds it way out and falls on the conveyor in a uniform mass which cannot well be distinguished from dark rich loam. Occasionally a few very small bits of paper appear here and there on the surface, but these disappear very shortly owing to the disintegrating action of a rapid fermentation accelerated by the pounding the refuse received while passing through the machine. One very noticeable point is that immediately after treatment this mass, which previously had a most unpleasant smell, has entirely lost it and is not objectionable. The stuff thus treated is now ready to be spread at once on the soil as manure, and, according to the testimony of numerous customers of the Southwark Borough Council, it is found to possess highly valuable fertilizing properties, especially when used on heavy or clay soil. It has been found to produce the best results on vegetables, hops, fruit trees, and meadowland, but Kent farmers speak highly of it under almost any circumstances. At Halifax, Yorkshire, where this system has also been in use for the last two years, and, we believe, also at Bispham, a suburb of Blackpool, butchers' and fish offal are treated together with the house refuse, increasing the fertilizing properties of the manure and consequently its selling value. Night soil can be treated, it is claimed, without difficulty by this system by being mixed in certain proportions with the ordinary house refuse. Of the four dust manipulators at Southwark three are in constant use, one being kept in reserve and used when wanted. We understood that the output amounted to some 70 tons per day, and that the manure sold by the Council to farmers and kitchen gardeners in Kent amounts to something like 18,000 to 20,000 tons per year. This manure is sold at 2s.

4d. per ton in Kent, the Council being under the disadvantage of having to pay 1s. 8d. per ton for railway carriage owing to the distance from London. Each machine is capable of treating up to 4 or even 5 tons of refuse per hour. This limit, however, is seldom reached, as a good deal of time is lost in the intervals between the arrivals of the dust carts, the machines being consequently idle for a portion of the time. By an ingenious patent contrivance any pieces of steel or wrought iron that may by inadvertence fall into the dust manipulator are thrown out automatically without stopping the machine or in any way injuring the mechanism. Cast iron, tin, and softer metals are reduced to grit. We have been shown an assortment of steel pieces thus ejected, among them the battered carcass of a fifteen-pounder shell from a field gun. We were told that after an experience of over five years these machines now go through their daily routine like clockwork. The whole operation is performed in a manner cleanly, quiet, and free from any suspicion of nuisance, and the economical principle of giving back to the soil what comes from the soil is put into practice with such satisfactory results that this seems to us to be one solution of the problem of the disposal of house refuse, especially in towns or districts where economy is a consideration or where tall chimney stacks and volumes of black smoke are unwelcome. We understand that the same machines with certain modifications already introduced are unequalled for the treatment of granite, stone, flint, and equally hard materials now so generally required in the construction of roads, the hourly output of one such machine exceeding the figure of 20 tons per hour. Municipal engineers and surveyors might find it useful to look this matter up.

Disease Prevention in the Canal Zone.

Nearly every one is familiar in a general way with the excellent sanitary work done by the medical authorities in the Canal Zone. In the Scientific American Nov. 9, 1912, Dr. A. J. Orenstein, of the department of sanitation, gives some interesting figures concerning yellow fever and malaria, showing the effect of mosquito extermination. The Stegomyia calopus, the yellow fever mosquito, was attacked first by methods which he describes including the installation of public water supplies in the cities, and the breeding-places of the Stegomyia were practically destroyed. From having been the most numerous species of mosquitoes in Panama and Colon in 1905, the Stegomyia has now become the species least frequently encountered. A Stegomyia mosquito is now hard to find. The results of this work were soon manifested, as the following figures will show: From July 1, 1904 to June 1, 1905, 77 cases of yellow fever originated on the Isthmus; in June, 1905, 62 cases; in July, 42; in August, 27; in September, 6; in October, 3; in November, 2; December (in Colon) 1. During 1906 there was only one case of yellow fever on the Isthmus, in Colon. Since then not a single case of yellow fever has occurred on the Isthmus, although a continuous influx of non-immunes is taking place.

Malaria was next attacked. Orenstein says that malaria is a disease that undermines a man's health insidiously and lowers his working efficiency to an extent not approached by any other disease with the possible exception of hookworm. After describing the methods employed in the eradication of the anophelines mosquito, which are quite different from those employed in attacking the yellow fever insect, he says that these measures, conscientiously and painstakingly carried out, resulted in reducing the number of malaria cases treated in the hospitals from 6.83 per cent. of the working force per month in 1906 to 1.53 per cent. of the working force per month in 1911, and the death from malaria among employees from 233 in 1906 to 47 in 1911. In 1906 a good deal of preventive work had already been accomplished. What malaria would have done to the working force, had conditions remained as they were in 1904, is indicated by the fact that among 150 U. S. marines stationed at Empire in the Canal Zone, in 1904, 170 cases of malaria developed in four months. In addition to the measures employed in reducing the mortality and morbidity from these two dangerous diseases, the steps taken to provide the employees working on the canal with comfortable quarters and wholesome

food and recreation, Orenstein says, undoubtedly contributed greatly to the health of the employees as is illustrated by the history of pneumonia among the negroes. In 1906, before provision had been made to feed the laborers, and when housing had not been brought up to the present standard, a number of cases of pneumonia occurred among the negro laborers. The mortality from pneumonia was 413 in 1906 and 328 in 1907. A board appointed to study this disease recommended that the laborers be fed by the government and that certain improvements in their housing be made. When these recommendations were carried into effect the number of cases of pneumonia immediately diminished. In 1908 there were but 93 deaths; in 1909, 70; in 1910, 73, and in 1911, 94.

WHY THE HIGH COST OF LIVING.

By HON. ARTHUR CAPPER, Topeka, Kansas.

I have been in very close touch with the farmers of Kansas and the Southwest for more than 25 years. I have seen many bumper crops come into the harvest and an immense amount of money change hands in the purchase and resale of these crops from the time they leave the farm until they go into the home of the consumer—and all too many times have I seen the price received by the producer double, treble, quadruple and more by the time the product had found its way to the consumer.

The farmer did not realize the percentage of net profits to which he was entitled and the consumer's money did not buy the quantity and quality that it should have bought if first cost had been considered in fixing the retail price of farm products as it is in all other lines.

This ten-fold price increase is without reason—without justification. There are too many profit-takers—or somebody taking too much profit—somewhere along the line of distribution, and the alarming increase in the cost of living which has come as a natural result furnishes all the evidence that should be necessary to prove that it is high time that some co-operative method of distribution is worked out that will link the farmer more closely to the consumer.

When the right plan or method is found it will undoubtedly do more than all else that has ever been thought of or devised as a means of cutting the consumer cost on food stuffs. And while such co-operative plans of distribution will undoubtedly put the products of the farm into the homes of the consumers at a very great saving to the consumer it would also bring to the American farmer a tremendous increase in the profits now realized from his investment of money, time and labor—an increase that positively must come if the agricultural development of our country is to be carried forward in the manner and to the extent that the growth of the country in other ways demands.

For all these reasons I am in hearty sympathy with the movement being agitated by the country's leading farm paper publishers for the creating of a permanent organization for work in this direction during the First National Conference on Marketing and Farm Credits, which is to be held in Chicago April 8th, 9th, and 10th. The United States Department of Agriculture will undoubtedly see the need of establishing a permanent Bureau of Markets and carrying forward the work that will be started at the Chicago Conference.

HOW UNIVERSITIES CAN AID FARMERS' MARKET MOVEMENTS.

By DR. SIDNEY E. MEZES, President University of Texas.

Whatever affects materially the economic life of 85 per cent. of the people of a state must be of interset to every intelligent citizen of that estate. The University of Texas, therefore, looks with great favor on the First National Conference on Marketing and Farm Credits called to meet in Chicago April 8, 9, 10, 1913, party as a result of the activity of Col. Frank P. Holland of Dallas.

For several generations the state and nation have been giving aid to the farmers through schools of agriculture, experiment stations, and other means of education; at the same time, our government, unlike many European countries, has sig-

nally failed to teach the farmer how to market his produce to the best advantage and it has also failed to give the counsel and encouragement necessarily incident to the financial problems of the rural producer of wealth. The results in the United States are everywhere apparent. As Mr. Clarence Ousley remarks, "The more the farmer produces, the less he gets. If it were statesmanship to educate the farmers to increase production, it is now much more the part of statesmanship to provide for a proper system of marketing his products that the hands of the producer may get adequate remuneration."

Again, while land and marketable products of the soil afford the best security for debt, the farmer cannot so readily secure credit as the ordinary business man. For the credits he does obtain the rate of interest he is obliged to pay is far in excess of those enjoyed by others engaged in more hazardous enterprises. The men following agriculture, although constituting so large and so important a position of American citizenship, are handicapped by almost intolerable conditions—a state of affairs from which it is the plain duty of leaders in business philanthropy and education to free them.

Students generally agree that the problems both of agricultural credits and of co-operating marketing can best be solved in matters of detail by individual states. The National Conference will, however, doubtless play an important part in offering solution to problems common to all the states. Moreover, public attention needs to be aroused; needed information must be disseminated; and certain national features need thorough discussion and wise determination.

The University of Texas has already recognized the importance of the marketing problem by the appointment of a man in its extension department to study the question of the marketing of farm products. It has also recognized the importance of agricultural credit. Through the co-operation of its school of business training and department of law, the first Credit Union of the Southwest has just been formed. It is fortunate that no special legislation seems necessary to put the system into successful operation. The constitution and by-laws of this union are now being perfected and it is expected that it will begin business operations in a short time.

There is no state in the Union more in need of a systematic plan of marketing than Texas. While the marketing of the onion crop here has been facilitated by co-operative action, many other perishable products are being wasted on account of the absence of suitable provisions for marketing. The impression prevails that the first step in the solution of these questions, after a careful study of the local situation, is to make an exhaustive study of the co-operative marketing methods in other countries as well as our own. Co-operative methods in marketing have reached a comparatively advanced stage in Holland, Great Britain, France and Germany. In the two latter countries the co-operative credit union has a vital connection with co-operative production and co-operative marketing.

While some studies have been made of the European situation no complete and exhaustive report has yet been made in regard to the operation of co-operative ventures in these countries.

The National Conference will give an opportunity for collating the observation and experience of the best students of the question and will doubtless pave the way both to an immediate improvement of the present situation and to the preparation of plans for a greater improvement after further study of the situation. A series of bulletins or publications bringing before the people the work that has been done in this and other countries for the conservation of agricultural products, such as might result from the National Conference, would be of great importance in furthering the movement and promoting the common weal.

This whole movement is directly in accord with the effort which the state universities are now making to bring to the people the education and training needed in the solution of the problems that are of great importance in their daily life.

COMMENT ON BOOKS

[Any book reviewed in this department may be obtained direct from the publishers, or from leading booksellers, or through *The Public Health Journal*.]

Muscle Training in the Treatment of Infantile Paralysis.

The demand for light upon this subject exhausted the file of the Journal in which it was printed and has led Dr. R. W. Lovett and the Medical Journal to re-issue the article in form of a thirty-two page reprint at the nominal price of twenty-five cents. The directions given are explicit and make the reprint not only of great value, but practically the only set of definite directions in the treatment by exercise of conditions following paralysis.

By Wilhelmine G. Wright. Boston Normal School of Gymnastics, 1905. Reprinted from The Boston Medical and Surgical Journal, Vol. clxvii, No. 17, pp. 567-574, October 24, 1912. Price, 25c. W. M. Leonard, Publisher, 101 Tremont Street, Boston, Mass.

THE ELEMENTS OF CHILD PROTECTION.

By Dr. Sigmund Engel.

*(Translated from the German by Dr. Eden Paul.)

It is, perhaps, unfortunate that the reader should be introduced to this very meritorious volume by a preface and two chapters that are very likely to dampen the ardor of research into child protection and induce him to place this book on the shelf. It is unfortunate, for although some aspects of the child welfare problem are merely touched upon, yet the book is well worthy of careful perusal by every serious student of the relation of social conditions to child welfare, and of the efforts being made for social betterment and child protection. When the ordinary reader is met with a preface that tells him that he is about to be shown "the intimate interdependence of child protection with socialism and with Darwininism" is very apt to shy off, and by the time he glances at the first two chapters dealing with "Certain Population Problems," and "Statistical Problems of Population" he is very likely to relegate the book to the library shelf. But if one has the courage to hang on he is well repaid for his effort.

Those students of modern home and school life and of the immediate and ultimate, the importance of child welfare work, will have their attention caught by the introductory sentence. "In the struggle for existence among the nations, that nation is the victor which consists of the greatest number of individuals best endowed with bodily, mental and moral health." Governments have been anxious about "race suicide," but "until quite recently it is only upon quantity of population that any stress has been laid: the quality of the population has been ignored." All that is involved in the quantity and quality of a race is summed up in the great aims of child welfare work.

1. Prevention of a high infant and child mortality rate, in the preservation of life and health.

2. Prevention of a high child criminality rate, i.e., the development of children into useful citizens of the state. Therefore an enlightened state will set aside its largest appropriation for and direct its best energies to the physical, mental, and moral development of its children. If necessary for its own protection and efficiency, for its own happiness, prosperity and contentment, the state will not only see that its children are properly educated, but also that they are fed, clothed and housed properly, and that they have that play and amusement necessary for the development of a normal child. This would be a sane and logical expenditure of public money in the interests of both the quantity and quality of the race. Is there a direct casual connection between the quality of the species and the number of its individuals? Does the fertility of the individual of any species diminish as the species advances in its evolution? "An excessive number of conception, pregnancies and deliveries is harmful, not merely from the outlook of the domestic economist, but also from that of the political economist; for when the

*Messers George Allen & Co., Ltd., London: Ruskin House, 44-45 Rathbone Place, W. 15 s. nett.

number of births is exceedingly large it is very likely that the number of those to attain maturity will actually be less than if the birth rate had been lower." This is of grave economic moment, for, if to effect an increase of population, a comparatively large number of births and deaths has been requisite, the waste of time, energy and money has been enormous, leaving out of consideration the effect of mental strain, worry and grief upon the living individuals of the race. The good people of this country may be somewhat startled to hear anyone calmly discuss this phase of the race question as follows: "The great number of conceptions among the proletariat (the poor) interferes with the effective working of selective forces—an evil which every unprejudiced thinker must deplore and must endeavor to remedy to the utmost of his ability. The most important means available for this purpose are: first, a rise in wages, and, second, the use by the proletariat of positive methods to restrict or prevent pro-creation. We have no right to advise complete abstinence from sexual intercourse, and if the advice were given it would be ignored. Entire absence from sexual intercourse is injurious to health. In any case, the sexual impulse cannot be entirely suppressed. Originally for mankind, as now for the lower animals copulation and pro-creation were practically equivalent acts. But in the human species to-day the gratification of the sexual impulse does not unconditionally involve the reproduction of the species. We possess an effective means for the regulation of the race. And when we speak of the prevention of conception we must never lose sight of the fact that the most effective, convenient and inexpensive methods employed for this end furnish in addition protection from venereal infection. The idea that the use of such means is immoral is simply ludicrous. Is ita comparatively moral act to pro-create an illegimate or a diseased child; or to bring a child into the world when no proper provision can be made for its sustenance; or for a man to endanger his wife's health by an unbroken succession of pregnancies? Parents should pro-create so many children only as they are in a position to maintain and educate in a suitable manner.

The tendency of evolution to-day is to effect a decline in the birth rate. In the future far more attention will be paid than has been paid in the past to the demands of social hygiene that potential parents shall be careful to pro-create healthy children only. On the other hand, the knowledge that will enable parents to prevent undesired conceptions will become more and more widely diffused. In time to come an ever-increasing proportion of pregnancies will be deliberately willed. The decline in the birthrate will necessarily result in a decline in the death rate of infants and children."

To give reasonable consideration to these statements the unprejudiced reader will follow his argument with an aroused interest in his chapters on "Child Mortality"; the greater number of births of male children than of female children, but the much greater death rate among male children resulting in an excess of the female; on "Marriage and Parental Responsibility," "Marriages and Heredity"; "Women's Labor and Child Labor"; "Prostitution and the White Slave Traffic," and "Punishable Offences Against Children," which are placed under three heads, viz: (1) Infanticide, (2) Abortion, (3) Criminal Offences Against Chastity. Here again, under "Infanticide," ordinary beliefs get a rude jolt from this vigorous expounder of modern ideas, for he applies the "Osler theory," not to those who have lost their usefulness, but to those whomever can be useful citizens. "There are certain children with respect to whom medical science indicates beyond the possibility of a doubt that it is impossible for them to become useful members of society; indeed, in the case of many of them, it is obvious that their existence is directly harmful to the species —for example, cripples, high-grade cretins, idiots and children with gross deformities. When such children, for one reason or another, find their way into the world they should be quickly and painlessly destroyed. The most suitable way would seem to be that, after a thorough expert medical examination, such children should be killed by a swift and painless narcotic. For the present we may leave the question open whether the consent of the parents should be obtained." That

word "killed" is likely to jar most of us not wholly absorbed in his theory and his argument. "But just as to-day we treat certain individuals whose conduct endangers the present generation in such a way as to deprive them of opportunities for doing further harm, so also should we deal as seems best from the social point of view with those individuals who are useless to Society, or may be harmful to future generations. As soon as it is generally understood that the interest of future generations is at least as important as that of the present generation, that the interest of the species is more important than that of a few individuals useless to Society, and as soon as the number of cases in which such destruction of children is desirable has been greatly diminished owing to the adoption of appropriate preventive measures, it will be regarded as a necessary and moral act to put an end to these defectives." The advocacy of such measures as these to rid Society of undesirable or useless members will cause the staid to throw up their hands in horror, and even those with the most advanced ideas to recoil from as crude, cruel and quite unnecessary. Where many will support the advocacy of the sterilization of those likely to produce undesirables, or even what the author here suggests, viz., a general," "effective, convenient and inexpensive method of prevention of conception," few indeed can calmly discuss the destruction of life to save Society from its useless members, and thereby relieve it of a burden. This, of course, would be the least costly way in the immediate money outlay, but the general effect on the living members of Society would be disastrous; it would undoubtedly tend to materialize, and even brutalize, the general viewpoint. Besides, this drastic measure is not necessary.

If these members of society are segregated and further reproduction stopped, the class will in time die off. Most people are now prepared to accept the view that society for its own protection should not allow the habitual drunkard, the confirmed criminal, the insane, the idiot, imbecile or feebleminded, the consumptive or other diseased person to marry and reproduce his kind. These people produce children markedly sub-normal mentally and physically; such children become useles smembers of society; are a menace to the State and become a national burden. But the State has to go futher in its own protection. It is a part of its duty to see that children born of healthy parents are so reared that they shall become useful members of society. "It is a demonstrable fact that most children that die succumb, not from inherited weakness but owing to the errors and defects of their upbringing." In fact, since the useless members of society the insane, the idiot, the imbecile, the diseased, are nowadays housed, clothed, fed, and cared for by the Government, which secures all the aid that medical science can give to preserve their lives, it follows that the useless members of society are more likely to be preserved than those who would make efficient members of the State. The children of the poor, boys and girls who would more than return to the State the cost of their rearing, or the money expended in measures that aid in their rearing are allowed to die from want of proper feeding, clothing, and housing. "The most important means for the diminution of child mortality is to improve the condition of working class life." But instead of preserving these lusty youngsters for the settlement and upbuilding of this country by an intelligent expenditure of money on the improvement of housing conditions, establishment of playgrounds, an efficient supervision of their physical needs, sanitary surroundings, and an education that will fit them for a place in life, so preserving their health, developing their inborn capacities, and making them capable and efficient citizens, we expend our money in an immigration policy that gives us for the most part the poorest and least efficient people in Europe to settle our country. And thre is a great deal of truth in the statement that "we concern ourselves solely with the interests of the contemporary generation; the interests of future generations are left entirely to chance; it is perfectly obvious that whenever a conflict of interests arise, the well being of our descendants is unhesitatingly sacrificed. The view will ultimately prevail that the strong only are of value to society,

and that every weak member of the community involves a definite social loss. The day wil leome in which fatherhood and motherhood will be permitted only to the strong, and in which every endeavor will be made to prevent the birth of diseased or weakly children. Enduring human progress can be affected only by the simultaneous study and application of the laws both of education and heredity." But even in the effort to produce this change by education, by enlightenment, we are bound to hear the maudlin sentimental cry of interference with personal liberty, a cry it is so easy to tack on the demagogue's heroics. If our eyes were free from the beams that limit our vision and obscure our logic, we could see that this personal liberty cry is but the cry of personal indulgence, irresponsibility, and thriftlessness. It is the same unclean spirit crying out in our midst to-day that revealed the Christ. "And one was possessed of an unclean spirit, and the unclean spirit cried out, 'Let us alone,' Art Thou come to destroy us before our time!" This book is well worth careful study by all those interested in the social problems of child life.

Nova Scotia to Guard Public Health.

The provision by legislation of a number of hospitals for the treatment of advanced cases of tuberculosis and the appointment of a trained medical examiner who will visit the various counties and work in conjunction with a system of cleanliness and nurses were the main features of the speech from the Throne at the opening of the Nova Scotia Legislature. The cost of the erection and maintenance of the hospitals will be borne by the Province.

In addition to the Medical Practices offered for sale by the Canadian Medical Exchange Office to be found among our advertising pages each month Dr. W. E. Hamill, who conducts the above Exchange Office, wishes us to state that inasmuch as these offers can only necessarily appear once a month in our Publication, that in future he will present interim offers each week, on Saturdays, under "Business Chances" in the "Toronto Globe," thus enabling those interested to keep a better tally on his offers and to secure results and a short cut to the goal desired. His sixteen years' experience as an exclusive Medical Broker has enabled the doctor to perfect a system whereby Vendors and Vendees are brought together, which the profession will quickly perceive and take advantage of when desiring either to sell out or to buy. Office 75 Yonge St. Hours 11:00 a.m. to 5:00 p.m.

PROVINCIAL BOARD OF HEALTH, ONTARIO

The Annual Meeting of the Ontario Health Officers' Association will be held in the Parliament Buildings, Toronto, May 29th and 30th, at which all the Medical Officers in the Province are required to attend as provided in Section 42 of the Public Health Act.

Arrangements are being made for reduced rates on the principal lines of railway, and a large attendance is expected.

The programme will be issued at an early date.

A. H. WRIGHT, M.D.,
President,

J. W. S. McCULLOUGH, M.D.,
Secretary.